

**CONVERSE ENVIRONMENTAL WEST**

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August 29, 1991



Mr. David Dyke  
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Subject: **FINAL REPORT - SOIL AND GROUND WATER INVESTIGATION**  
Former Chrysler New Car Preparation Facility  
12140 Slauson Avenue  
Santa Fe Springs, California  
CEW Project No. 89-41-130-03

*SAR*

Dear Mr. Dyke:

Enclosed please find the results of Converse Environmental West's (CEW) soil and ground water investigation recently conducted at the former Chrysler New Car Preparation plant located in Santa Fe Springs, California.

This report is a culmination of work conducted at the former Chrysler facility to investigate the source(s) and extent of soil and ground water contamination identified beneath and in the vicinity of the 750 gallon clarifier, previously used by Chrysler at their Body Works Building.

If you have any questions regarding the contents of this report, please call us at (818) 796-8200.

Respectfully,

CONVERSE ENVIRONMENTAL WEST

*Hugh A. Rose*

Hugh A. Rose, CIH, REA  
Project Director

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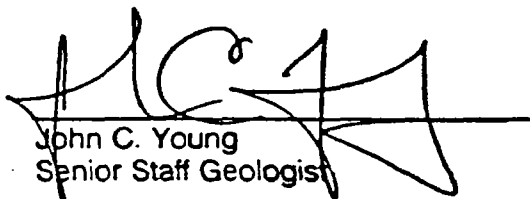
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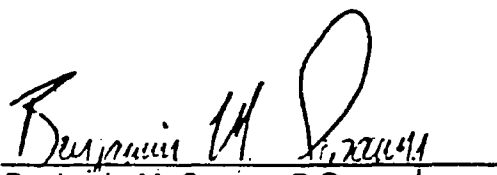
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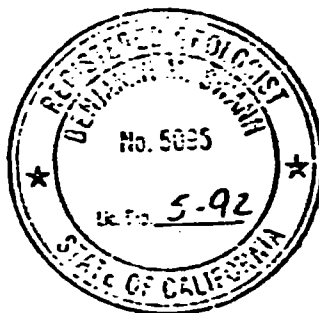
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## PROFESSIONAL CERTIFICATION

### REPORT PREPARED BY:

  
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This report has been prepared for the exclusive use of Catellus Development Corporation as it pertains to the property located at 12140 Slauson Avenue, Santa Fe Springs, California. At the request of Catellus Development Corporation this report has specifically excluded any conclusions regarding the impact of the former Chrysler site on subsurface soils or ground water. Our services have been performed in accordance with applicable state and local ordinances, and generally accepted practices in the geosciences. No other warranty, either expressed or implied, is made.

Converse Environmental West (CEW) is not responsible or liable for any claims or damages associated with interpretation of available information. This report should not be regarded as a guarantee that no further contamination, beyond that which was detected in our investigation, is present beneath the property. In the event that changes in the nature of the property occur, or additional, relevant information about the property is brought to our attention, the conclusions and recommendations contained in this report may not be valid unless these changes and additional relevant information are reviewed and the conclusions of this report are modified or verified in writing.

## EXECUTIVE SUMMARY

This report presents the results of a soil and ground water investigation recently performed at the former Chrysler New Car Preparation Plant located at 12140 Slauson Avenue, Santa Fe Springs, California. Converse Environmental West (CEW) was requested by Catellus Development Corporation to investigate elevated levels of chlorinated hydrocarbons discovered in soil emanating outwards from a clarifier previously removed by Chrysler at Chrysler's former New Car Preparation Facility.

The investigation consisted of drilling and sampling 16 soil borings, the observation and sampling of soils excavated from beneath the former clarifier, installation of 11 ground water monitoring wells, two soil-gas surveys and the analytical testing of soil and ground water samples.

Analytical results of soil samples collected beneath and in the vicinity of the former Chrysler clarifier revealed total petroleum hydrocarbons (TPH) concentrations up to 13,000 mg/kg (ppm) and tetrachlorethane (PCE), dichloroethene (DCE), ethylbenzene and xylene in the parts per million range. Odorous dark olive gray soil along with imported gravel was excavated from beneath the former Chrysler clarifier location. Laboratory and field findings revealed that a hydrocarbon plume exists within soils beneath and emanating outward from the former clarifier. These chemicals were also detected at several depths down to the water table suggesting that ground water could be impacted by chemicals associated with the former Chrysler clarifier.

Ground water analysis from on-site monitoring wells (GW-4, GW-5, GW-6, GW-9 and GW-10) installed up-gradient from the former Chrysler clarifier, exhibited contaminant concentrations of several chlorinated hydrocarbons (primarily DCE, TCE and PCE). Analysis of water samples from on-site monitoring wells installed down-gradient from the former Chrysler clarifier exhibited contaminant concentrations greater than the similar compounds detected in the up-gradient wells on-site during the same sampling event.

## 1.0 INTRODUCTION

This is Converse Environmental West's ("CEW") final report on soil and ground water contamination identified at a portion of the former Chrysler New Car Preparation Facility, located at 12140 Slauson Avenue in Santa Fe Springs, California. CEW was authorized by Mr. Ric Notini and Mr. David Dyke of the Catellus Development Corporation (Catellus) to perform the following investigations to examine the source and extent of chlorinated hydrocarbons discovered in March, 1989, during a preliminary environmental assessment of the former Chrysler facility.

The former Chrysler facility (the "site") occupied a 40-acre property from approximately 1965 to 1988. This property has since been divided into three separate properties referred to as: the Multitenant property (land parcel 1, Figure 2), the La Salle Property (land parcel 11, Figure 2), and the Central Property (land parcel 2-10, Figure 2). These properties are all currently owned by Catellus. This report primarily addresses the Central Property where the majority of Chrysler's former operations were located. However, results of sampling conducted on the Multitenant and La Salle Properties are also included. Additional investigations of the La Salle Property (12130 Slauson Avenue) are the subject of a separate report by Dames and Moore.

In the course of performing an environmental due-diligence investigation at the former Chrysler facility, CEW in March of 1989, discovered elevated levels of purgeable halocarbon hydrocarbons in soil beneath and in the vicinity of a former clarifier previously used by Chrysler at their Body Works Building. This 750 gallon clarifier (referred to throughout the text as "the former Chrysler clarifier") was removed in March, 1988 by the consultant for Chrysler.

The discovery of the contamination in March, 1989, prompted the drilling and sampling of five soil borings to investigate the nature, source and extent of the chemicals in soils associated with the former Chrysler clarifier. In the course of drilling these five soil borings, dark green to black visibly-stained soil with a chemical odor was identified beneath and in the immediate vicinity of the former Chrysler clarifier. This discovery resulted in the excavation of soil beneath the former Chrysler clarifier in an attempt to remove the visibly stained soil and define its nature, source and extent. The visual extent of the stained soil at this location appeared to be confined to an area approximately 25' x 25' to a depth of 33 feet, where ground water was encountered.

To fully characterize the lateral extent of soil contamination identified during the excavation, CEW drilled seven additional soil borings in late November, 1990. The results revealed the presence of several chlorinated hydrocarbon compounds in soil which appeared to extend outwards from the location of the former Chrysler clarifier.

The discovery of chemicals in soil beneath and extending outward from the location of the former Chrysler clarifier prompted the installation of eleven ground water monitoring wells in three phases to evaluate ground water conditions at the

site. CEW's review of the results obtained from the initial three ground water monitoring wells, drilled in November, 1990 indicate the presence of chlorinated hydrocarbon compounds in ground water. This discovery led to the installation of eight additional monitoring wells, four wells installed in December, 1990 and four installed in January, 1991. Analytical results obtained from the additional eight monitoring wells evidenced the continued presence of chlorinated and aromatic hydrocarbon compounds within the ground water.

As part of the soil and ground water investigations, two soil-gas surveys were conducted to determine whether chlorinated and aromatic hydrocarbons were present within soil gas at the Central and La Salle Properties. Our review of the analytical results revealed the presence of Freon 11, PCE and TCE in the part per billion range in several sample points on the Central Property and Freon 11 in the part per billion range in one sampling point on the La Salle Property.

This report presents our findings along with an overview of the investigations conducted at the former Chrysler facility performed by CEW and other consultants.



## **2.0 PREVIOUS INVESTIGATIONS**

### **2.1 Petroleum Industry Consultants, Inc.**

In March of 1988, Petroleum Industry Consultants, Inc. ("PIC") was requested by Colorado Pacific Constructors, Inc., Chrysler's consultant, to oversee the excavation, removal and sampling of ten underground storage tanks and seven concrete lined clarifiers used at the site, which was then in the process of closing. PIC reported analyzing twenty two soil samples from beneath the ten tanks and seven clarifiers. Analytical results revealed elevated concentrations of Total Petroleum Hydrocarbons (TPH) within seven soil samples collected from five locations on-site, including directly beneath the 750 gallon former Chrysler clarifier currently under investigation. The initial clarifier sample indicated a TPH concentration of 3,100 ppm.

Subsequently, PIC conducted a remedial excavation at the five locations where elevated concentrations of TPH were found. The five excavations varied in depth with the maximum depth being twenty five feet. Verification soil samples collected along the sidewalls and terminus of the excavation in and around the former Chrysler clarifier ranged in depth from eighteen to twenty feet below grade. Verification soil samples exhibited TPH concentrations ranging from 6.2 ppm to 17 ppm. PIC reported that over one thousand cubic yards of soil containing TPH's was excavated from the five locations on-site and hauled to a class 1 disposal facility. Imported pea gravel and fill material similar to native soil was used by PIC to backfill the five excavations on-site.

PIC stated in their report that all final samples exhibited TPH concentrations of 110 ppm or less (PIC Report, March, 1988, Appendix E). PIC did not sample any of the locations for chlorinated or aromatic hydrocarbons.

### **2.2 GeoSec**

In October, 1988, GeoSec, a geotechnical consultant working for Chrysler, supervised the excavation of two underground storage tanks and the environmental soil sampling conducted thereafter. GeoSec's report did not specify the location of the removed underground storage tanks. However, GeoSec's site plan appears to plot the tanks in the vicinity of the former administration building (the Multitenant Property). The GeoSec report stated that no detectable levels of TPH were found beneath the storage tanks. See Appendix E for a copy of the GeoSec's report.

### **2.3 McLaren Environmental Engineering**

A property transaction environmental assessment report was conducted by McLaren Environmental Engineering in January, 1989, for the property located at 12140 Slauson Avenue, Santa Fe Springs, CA. McLaren Engineering was requested by Santa Fe Pacific Realty Corporation (predecessor to Catellus) to conduct a site use history on the former Chrysler New Car Preparation Facility.

The McLaren Engineering report included a brief site description of the property, a site inspection which included a discussion of the buildings on-site and the chemical and environmental practices associated with each building, and an agency review search.

McLaren Engineering reviewed PIC's March, 1988 report on the Chrysler tank and clarifier removals and discussed discrepancies in PIC's reporting of the analytical results. PIC stated that all final samples exhibited TPH concentrations of 42 ppm or less with the exception of sample P3-B which exhibited levels slightly above background at 110 ppm. However, McLaren Engineering states that only two of the five sites excavated had soil samples with TPH levels less than 100 ppm. After reviewing PIC's final analytical results, CEW does not concur with McLaren Engineering on the discrepancies they found in PIC's reporting of the final analytical results. See Appendix E for a copy of the McLaren Engineering report.

### **2.4 Converse Environmental Consultants California**

Following the McLaren investigation, in March, 1989, Converse Environmental Consultants California (CECC) conducted a Preliminary Environmental Assessment for the Santa Fe Pacific Realty Corporation (Catellus) on the property located at 12140 Slauson Avenue in Santa Fe Springs, California, the former Chrysler New Car Preparation Facility. The CECC investigation and report consisted of the following: a soil boring and sampling program, a site use history review, a historical report review, an analysis of regional geologic conditions, an aerial photograph and document review, and a regulatory agency review. See Appendix E for a copy of the CECC report.

The soil boring and sampling program conducted in March, 1989 consisted of drilling 20 soil borings to collect soil samples for environmental and geotechnical analysis. Only one soil boring out of the twenty borings drilled was analyzed for volatile organic compounds (VOC's). Analytical results of soil samples collected from that one soil boring, taken at the location of the former Chrysler clarifier at five and ten feet below grade, revealed the presence of Tetrachlorethane (PCE) at concentrations of 570 micrograms per kilogram (ug/kg) and 55 ug/kg respectively.

The discovery of PCE in soils collected from the soil boring at the location of the former Chrysler clarifier in March, 1989 led to the implementation of this soil and ground water investigation.

### **3.0 SITE CONDITIONS**

#### **3.1 Setting**

The Catellus Development Corporation property is located 1.3 miles east of the San Gabriel River freeway (Interstate highway 605) in northeastern Santa Fe Springs, California (Figure 1). The subject site encompasses approximately 40 acres with surface elevations ranging from 145 to 148 feet above mean sea level. The property slopes gently to the south/southeast.

#### **3.2 Past Site Use**

For a detailed review of past site use, please refer to Section 7.0, *Site Use History*, of CECC's Preliminary Environmental Assessment Report included in Appendix E.

#### **3.3 Current Site Use**

The Central Property is currently vacant. The Multitenant Property currently contains five office buildings and one building exists on land parcel No.11, the La Salle Property (see Figure 2).

## 4.0 GEOLOGIC CONDITIONS

### 4.1 Area Geology

The site (the former Chrysler facility) is located within the northeastern portion of the Downey Plain. This portion of the plain is comprised of Recent Series alluvial flood plain sediments of the Rio Hondo and San Gabriel River systems that were deposited during the Holocene epoch (less than 10,000 years old). Underlying the Recent Series alluvium sediment is the marine and nonmarine clastic sediment of the Lakewood and San Pedro formations (CDWR, 1961). These two formations were deposited during the Pleistocene epoch (10,000 to 1.6 million years old) and overlie the Pliocene deposited Pico formation.

Within the area of the site, the Recent Series alluvium consist of the Bellflower aquiclude member and the underlying Gaspar aquifer member. The Bellflower aquiclude is composed of relatively fine grained sediment which has been reported to restrict the vertical movement of ground water. However, adjacent to the site, the sand content of the aquiclude is higher than had been previously reported, thus increasing the permeability of the aquiclude (CDWR, 1961). The base of the Bellflower aquiclude is reported to be 120 to 130 feet above mean sea level, with a thickness of 20 feet within the site area (CDWR, 1961).

The Gaspar aquifer has been referred to as the coarse basal portion of the recent alluvium which underlies the Bellflower aquiclude. This coarse member is described within the California Department of Water Resources Bulletin No. 104 as continental stream deposits ranging in size from boulders and gravel to silt and clay. In the vicinity of the site, the aquifer is composed of 80 to 90 percent coarse sands and gravels. The base of the aquifer is reported to be 60 to 70 feet above mean sea level, with a thickness of 40 feet (CDWR, 1961).

The Lakewood and San Pedro formations are Pleistocene deposits which underlie the Recent Series alluvium and overlie the Pliocene Pico formation. The Lakewood formation lies unconformably over the San Pedro formation.

The Lakewood formation within the site vicinity is composed of the Gage aquifer and the Gardena aquifer (CDWR, 1961). The composition of the Gage aquifer has been described as fine yellow sand and gravel, while the Gardena aquifer has been described as a coarse sand and gravel, with minor lenses of sand, silty clay and clay. Both aquifers are in hydraulic continuity throughout most of their extent within the Central Basin and have been reported to vary in thickness from 20 to 40 feet near the site (CDWR, 1961).

The San Pedro formation consist of lower Pleistocene strata that lies unconformably beneath the Lakewood formation and overlies the Pico formation of late Pliocene age. Five members have been broken out of the San Pedro formation based on their ability to store and convey water, finer-grained units separating these members have not been named. The five members include the Hollydale aquifer, the Jefferson aquifer, the Lynwood aquifer, the Silverado aquifer and the Sunnyside aquifer. Formation thickness in the vicinity of the subject site ranges from 650 to 800 feet (CDWR, 1961).

#### 4.2 Hydrogeology

The subject site is located along the border of two ground water basins, the Montebello Forebay area and the Whittier area. These two basins, are a part of the greater Los Angeles Central Ground Water Basin (CDWR, 1961). The ground water basin includes such aquifers as the Gaspar aquifer, Gage aquifer, Gardena aquifer, Hollydale aquifer, Jefferson aquifer, Lynwood aquifer, Silverado aquifer and the Sunnyside aquifer. Of the eight aquifers listed, the Gardena aquifer along with the latter three aquifers are considered the primary water-bearing members within the area (CDWR, 1961). A 1978 Los Angeles County Flood Control District (LACFCD) map displays first aquifer ground water flow direction to the southwest in the site vicinity.

Depth to ground water was measured 78.5' below grade in LACFCD monitoring well, No. 1633B, located on Burke Street and Dice Road, approximately 1/4 mile west of the site. Ground water was measured 43' below grade in March, 1990 in LACFCD well, No. 1632C, located 1/2 mile north at the intersection of Washington Boulevard and Chatfield Avenue.

A review of agency records reveal that ground water within much of the region has been impacted by aromatic or chlorinated hydrocarbons, including PCE, TCE and Trichlorofluoromethane.

A water well operated by the city of Santa Fe Springs (State well, No. 2S11W30R3, SFS water well No. 1) located at the corner of Norwalk Boulevard and Los Nietos Road, approximately 3/4 mile southwest of the site has exhibited trace concentrations (1.3 ppb, 11/90) of TCE within ground water (Bookman-Edmonston, 1990). The contaminated well, drilled to a depth of 900 feet below grade, is perforated from 200 to 900 feet (verbal communication from Central Municipal Water District Engineer, 1991). The McKesson Corporation site located at 9005 Sorenson Avenue, 1/3 mile southwest of the site is currently under investigation by the CRWQCB for the presence of TCE, PCE and TCA in ground water.

## 5.0 FIELD INVESTIGATIONS

As generally described in the Introduction of this report, CEW personnel conducted several field investigations between November, 1990 and January, 1991, which consisted of the following activities:

- \* The drilling and sampling of twelve soil borings in two separate phases to characterize soils in and around the former Chrysler clarifier.
- \* The drilling and sampling of four soil borings as part of a preliminary site assessment to evaluate subsurface soils at the Central and Multitenant Properties.
- \* The sampling of soils excavated in the location of the former Chrysler clarifier.
- \* The installation of eleven ground water monitoring wells to assess ground water conditions in and around the entire site.
- \* The implementation of two soil-gas surveys; one to assess shallow soil conditions throughout the Central and La Salle Properties and the second to evaluate the possibility of elevated-chemical concentrations in soils in the vicinity of a former Chrysler clarifier located near the corner of Burke Street and Beasor Drive.

### 5.1 Soil Borings

On November 15, 1990, five soil borings (BH-9A, BH-9B, BH-9C, BH-9D and BH-9E) were drilled in the vicinity of the former Chrysler clarifier, where CECC had previously determined during its Preliminary Assessment that the soils were impacted by chlorinated hydrocarbons (Figure 3). Soil borings BH-9B through BH-9E were drilled to a depth of 30 feet below grade and soil boring BH-9A was drilled to a depth of 35 feet below grade. Soil samples were collected for laboratory analysis in each boring at depths of 10, 20, 25, 30 and 35 feet below grade.

In the course of drilling these soil borings, dark gray to black visibly-stained soil with a chemical odor was identified beneath (30 feet below grade) and in the vicinity of the former Chrysler clarifier. This discovery resulted in the excavation of soil in the vicinity and beneath the former Chrysler clarifier in an attempt to remove the visibly-stained soil and define its nature and source and the extent of contamination (see *Excavation and Sampling Beneath Former Clarifier*, Section 5.2).

On November 26, 1990, four other soil borings (BH-21 through BH-24) were drilled as part of a preliminary site assessment undertaken by Catellus at the Central and Multitenant Properties (Figure 2). The preliminary site assessment consisted of advancing four soil borings to a depth of 30 feet below grade with sample collection at five foot intervals starting at five feet below grade. Since all four borings were part of a preliminary site assessment and not part of the clarifier or ground water investigations, only samples from each borings terminus (30'), plus one additional sample, were analyzed for purgeable halocarbon compounds by EPA test method 8010. The selection for analysis of the additional soil sample from each boring was based upon highest Photo Ionization Detector (PID) readings detected in the field or if no organic vapors were detected the twenty foot sample was analyzed. All six samples obtained from boring BH-22 were analyzed according to EPA test method 8010.

Upon discovery of contaminated soil within the above referenced excavation, (see Section 5.2), CEW conducted a second phase of drilling and sampling of soil borings on November 28, 1990 to define the lateral extent of the observed contamination. Seven soil borings (BH-9F through BH-9L) were advanced to a depth of 30 feet below grade to permit the collection of soil samples at 20, 25 and 30 feet below grade in each boring (Figure 3). Several soil borings were located within the excavation access ramp, so drilling began at depths of 10 to 15 feet below grade.

All borehole logging was performed by experienced staff personnel under the direct supervision of a California-registered geologist (See Appendix B for soil boring logs). The complete details of the drilling and sampling techniques are described in Appendix A, *Methods of Investigation*. Soil samples were screened in the field using an Organic Vapor Analyzer (OVA) and Photo Ionization Detector (PID) with results recorded on the boring logs (Appendix B). Samples were handled and transported to a California-state certified laboratory according to Environmental Protection Agency (EPA) protocol. This protocol includes the chain-of-custody documentation included in Appendix D.

## **5.2 Excavation and Sampling Beneath Former Clarifier**

Upon discovering visually stained soil and odors emanating from soil samples collected from soil borings BH-9A through BH-9E (see *Soil Borings*, Section 5.1) an exploratory excavation was conducted in the area of the former Chrysler clarifier, from November 16 through 19, 1990. This excavation was conducted to investigate the nature, source and extent of contamination in the vicinity of the former Chrysler clarifier and to remove the visibly stained soil previously identified. Figures 2 and 3 display the location of the excavation.

The excavation was conducted using a Caterpillar bucket loader and a Caterpillar 235 track mounted hoe. Soil was removed from an area of approximately 30' x 28' to a depth of 33 feet below grade (Figure 3). In the process of excavating to a depth of 33' below grade, a ramp was built to allow access for the track hoe, this required the removal of additional soil which covered an area of approximately 150' x 50' to a depth of 12 feet. (Figure 3). Approximately 1000 cubic yards of soil

was excavated from beneath and beyond the area where the former Chrysler clarifier was located, and this soil was stockpiled on-site (Figure 2). Two soil samples, S-1 and S-2 were collected on November 19, 1990, from within the excavation at a depth of 33 feet below grade. Laboratory results revealed the presence of purgeable halocarbons in these soil samples. Analytical results of these samples are presented in Table 3, and the soil sample locations are shown in Figure 4.

On December 18, 1990, eight soil samples (S-3 through S-10) were obtained for chemical analysis at various depths from the sidewalls of the excavation in the area of the former Chrysler clarifier (Figure 4). The samples were obtained by utilizing hand held augers to drill approximately 1.5 feet into the excavation sidewall. Subsequently, a 1.5" brass sleeve was driven into the soil using a hand held hammer to obtain an undisturbed soil sample.

One soil sample, SP-S1, was obtained for laboratory analysis from the excavated soil stockpiled on-site (Figure 2). This sample was obtained using the same method as previously used on samples S-3 through S-10. Analytical results of sample SP-S1 as well as samples S-3 through S-6 and samples S-9, S-10 are presented in Table 3.

### **5.3 Ground Water Monitoring Wells**

Following the discovery of chemicals in soil beneath and extending outward from the location of the former Chrysler clarifier, eleven ground water monitoring wells (GW-1 through GW-11) were installed in three phases to evaluate ground water conditions (see Figure 2 for monitoring well locations).

Phase one consisted of installing one ground water monitoring well (GW-1) on November 21, 1990, and two monitoring wells (GW-2 and GW-3) on November 26, 1990. All three pilot borings were drilled with an 8-inch hollow-stem auger to a depth of 50 feet below grade and sampled at five-foot intervals. Monitoring wells GW-2 and GW-3 were completed with 3-inch diameter well casing, while monitoring well GW-1 was completed with 4-inch well casing. All three monitoring wells were installed to a depth of 50 feet below grade.

Upon well completion, all three wells were developed, purged and sampled to analyze ground water conditions up-gradient and down-gradient of the clarifier (Figure 2). Samples were collected in sterilized glass vials and analyzed for purgeable halocarbons by EPA test method 601 (see Appendix A for development and sampling procedures). Results of this initial ground water sampling indicated the presence of purgeable halocarbon hydrocarbon compounds in the ground water. A summary of the analytical results for all ground water wells is presented in Table 4.

Phase two consisted of drilling four (4) additional monitoring wells (GW-4 through GW-7) on December 5, 6, and 7, 1990, to further evaluate the nature, source and



extent of the chemicals discovered in the ground water (Figure 2). Monitoring wells GW-4 through GW-6 were installed along Slauson Avenue north/northeast of the former Chrysler clarifier, while monitoring well GW-7 was installed down-gradient of the former Chrysler clarifier along the southern property line. The four wells were drilled to depths varying from 48' to 51' below grade using 10-inch hollow stem augers. Boreholes for monitoring wells GW-4, GW-6 and GW-7 were continuously cored to allow continuous monitoring of subsurface soils, while the borehole for GW-5 was sampled at five foot intervals.

Subsequent to well installation, all four monitoring wells were developed and purged before sampling. Ground water samples were obtained from each well on-site and analyzed for purgeable halocarbons and aromatics by EPA test methods 601/602, respectively. Laboratory analysis revealed the presence of purgeable halocarbon hydrocarbon compounds in the ground water.

Phase three entailed the installation of four (4) additional wells (along the western portion of the property) from January 7 through 11, 1991 (Figure 2). Boreholes for monitoring wells GW-8 and GW-9 were continuously cored, while the boreholes for GW-10 and GW-11 were sampled at five foot intervals.

Ground water samples were obtained from the four additional monitoring wells as well as the seven previously-drilled on-site wells using the same development and sampling procedures as described in Appendix A, *Methods of Investigation*. Samples were analyzed for purgeable halocarbons and aromatics by EPA test methods 8010 and 8020, respectively. Laboratory findings are presented in Table 4, and are further discussed in Section 7.0, *Analytical Results*.

Field and equipment blanks were collected during the water well sampling and several samples of the drill rig water, used to complete the ground water monitoring wells, were collected and analyzed for purgeable halocarbons and aromatics via EPA method 8010 and 8020. Appendix A, *Methods of Investigation*, describes detailed procedures used in installation of all ground water monitoring wells on-site.

#### **5.4 Soil-Gas Surveys**

Two soil-gas surveys were conducted at the site in December, 1990 and January, 1991. The first soil-gas survey conducted assessed shallow soil conditions throughout the Central Property and the western portion of the La Salle Property. The second soil-gas survey evaluated the possibility of elevated-chemical concentrations in soils in the vicinity of a second former Chrysler clarifier located on the Central Property in the intersection of Burke Street and Beasor Drive (Figure 5).

The first soil-gas survey was conducted utilizing the Converse Mobile Sampling Unit ("MSU") to aid in determining the characteristics of vapors in the subsurface soils. The sampling points were randomly placed throughout the site excluding

the Multitenant Property and a portion of the La Salle Property because of on-site construction. The MSU was used to collect 24 soil-gas samples from a depth of approximately 4.5 feet below grade (Figure 5). At each of the specified locations, soil vapor was extracted from the subsurface via a vacuum pump and monitored with an OVA for total organics. Five vapor samples, (N, R, V, W and V) were obtained in one-liter tedlar sample bags and analyzed for purgeable halocarbons by EPA test method 8010.

The second soil-gas survey sampled five points in the location of a former Chrysler clarifier located in the intersection of present day Burke Street and Beasor Drive (Figure 5). Samples were obtained in tedlar sample bags by applying a hand-held vacuum pump to teflon tubing attached to MSU sampling rods which were advanced to a depth 4.5 feet below grade. The five vapor samples were analyzed for purgeable halocarbons (DCE, PCE, TCE and TCA) and for the aromatics (BTEX) by EPA test method 8010 and 8020, respectively. An on-site mobile laboratory was utilized for analysis. Analytical results from both soil-gas surveys are presented in Table 5, and the field procedures are described in Appendix A, *Methods of Investigation*.

## 6.0 FIELD FINDINGS

### 6.1 Site Soil Conditions

Soil conditions observed at the site have been divided into two categories described below: General Site Soil Conditions and Soil Conditions Associated With the Former Chrysler Clarifier. Generally, soils observed at the former Chrysler facility were consistent over the entire site. Fine-grained soils, silts and clays, were predominant from grade surface to 25 feet below grade, while coarser soil, sands and gravelly sands, predominated from approximately 30 feet below grade to depths of 50 feet below grade. Figure 2 locates and Figure 6 displays geologic cross-section A-A', a generalized cross-section of soils observed at the site.

#### 6.1.1 General Site Soil Conditions

The general site soil conditions consisted of soils observed during the drilling and sampling of four preliminary site assessment borings as well as soils observed during the installation of eleven ground water monitoring wells.

Soils recorded during the drilling of borings BH-21 through BH-24 (Figure 2) revealed consistently fine-grained soil from surface grade to a depth of 30 feet below grade. Soils consisted of brown to light brown, sandy silt, clayey silt, silt, silty clay and clay. Soil moisture ranged from slightly moist to moist. Boring BH-22 located in the southeastern portion of the Central Property revealed coarser soil such as, silty sand and sand from 22.5 feet below grade to the boring terminus at 30 feet below grade. OVA and PID readings are recorded on boring logs and are consistent with background levels, with the exception of sample five from boring BH-24. Sample five, obtained from a depth of 25 feet below grade, displayed a PID reading of 58 ppm.

As previously seen in the preliminary site assessment borings, soils encountered during the installation of eleven ground water monitoring wells generally consisted of fine-grained soil, silts and clays, from grade surface to approximately 30 feet below grade. From 30 feet to the borings terminus at approximately 50 feet below grade, coarser soils were encountered, predominantly sands and gravels.

Soils encountered consisted of sandy silt, clayey silt, silt, silty clay and clay in the upper 30 feet, and silt, sandy silt, silty sand, sand, gravelly sand, gravel from 30 feet to 50 feet below grade. Soil moisture ranged from slightly moist to wet, and color varied from tan/light brown to dark brown, orange brown, gray, olive brown and various shades in between.

OVA and PID readings of duplicate samples collected are recorded on boring logs and were within background levels. Monitoring well GW-10 was the only exception with readings of 45 to 200 ppm between 15 feet and 35 feet below grade. See Appendix B for boring logs.

#### **6.1.2 Soil Conditions Associated With the Former Chrysler Clarifier**

The soil conditions in the area of the former Chrysler clarifier were based on soils observed in the process of drilling twelve soil borings in the vicinity of the former Chrysler clarifier and soils observed during the excavation of backfill material and native soils from beneath the former Chrysler clarifier (Figure 3).

The twelve soil borings drilled in the vicinity of the former Chrysler clarifier (Figure 3) were similar in lithology to the previously mentioned soils encountered throughout the general site. However, several borings-- BH-9A, BH-9B, BH-9D, BH-9J and BH-9K-- encountered imported fill to a depth of nine feet below grade. The fill consisted of gravelly sand, sand and clayey silt. This import material was apparently used in 1988 by Chrysler's consultants, PIC, to backfill the remedial excavation conducted after the removal of the Chrysler clarifier. The fill material was later encountered and partially removed during the Catellus excavation (Section 5.2).

PID readings were recorded above background levels (156 ppm to 1420 ppm) in four borings, BH-9A, BH-9B, BH-9D and BH-9F. At the time of drilling, soil samples obtained from the above four borings exhibited both visual as well as olfactory characteristics of unknown chemicals in the soil. Ground water was encountered in only one boring BH-9A, at a depth of 33 feet below grade.

Soils encountered during the Catellus excavation included previously imported base gravel, imported silt and clay, native silt and clay, native sand and gravelly sand. Figures 3 locates and Figure 7 presents two generalized geologic cross-sections, B-B' and C-C'. The predominance of fine-grained soil situated above coarser-grained soil is again observed in both cross-sections, with the exception of the imported fill material.

OVA and PID readings observed during the excavation varied from a low of 1 ppm to a high of 620 ppm. Visually stained soil was observed during the excavation and appeared to be confined to an area approximately 25' x 25' to a depth of 33 feet at which point ground water was encountered.

## 6.2 Ground Water Conditions

Ground water was encountered at a depth of approximately 34.5 feet below grade as measured in eleven ground water monitoring wells located on the former Chrysler facility property. Figure 8 displays ground water elevations above mean sea level at each well and presents ground water contours based on those elevations. Ground water flow direction beneath the site is to the south/southwest. The estimated hydraulic gradient is .003 feet/foot. Ground water elevations measured within monitoring well GW-10 was recorded at 0.03 of an inch higher than GW-9 and thus a slight anomaly exists in the generally consistent flow pattern.

It appears that ground water encountered on-site is part of the Gaspar aquifer. This coincides with regional ground water data presented above (see Section 4.0 of this report). Ground water was encountered from 113.5 feet to 110 feet above mean sea level in eleven monitoring wells on-site. The upper boundary of the Gaspar aquifer has been estimated to be 110 feet to 115 feet above mean sea level in the vicinity of the site (CDWR, 1961).

## 6.3 Soil-Gas Conditions

Soil-gas conditions were recorded during the analysis of 29 sample points in two surveys conducted on the Central and La Salle Properties. In the first survey, chemicals were not detected using an OVA in the field. Laboratory results from both soil-gas surveys are presented in Table 5 and are further discussed in Section 7.0, *Analytical Results*.

## 6.4 MSDS Review and GC/MSScreen

CEW reviewed the Materials Safety Data Sheets (MSDS) for the compounds used at the former Chrysler facility and conducted a Gas Chromatograph/Mass Spectrometer (GC/MS) screen on one soil sample collected from beneath the former Chrysler clarifier.

The results of our review indicate that many compounds present in the soils are present to varying degrees in most of the compounds used by Chrysler at the Chrysler New Car Preparation facility. Several of the compounds used by Chrysler, *Emulsion Degreaser*, *Solv's It- Grease and Tar Remover*, *Dupont Primer*, *Dupont Grease and Wax* and *Granitize* contain listed ingredients such as C10-C15 paraffins-cycloparaffins and aromatics, toluene, xylenes, purgeable halocarbon solvents and hydrocarbon mixtures. Appendix C presents the MSDS documents for the above listed compounds.

The hydrocarbons listed above were detected within a GC/MS screen of soil sample S-3, collected from the excavation of the former Chrysler clarifier (Figures 4 and 7). The GC/MS screen revealed hydrocarbons in the range of C9-C21, with 92.5% of the contaminant falling into a hydrocarbon range of C10-C15. Aromatic hydrocarbon composition of the contaminant is 9.6%. Laboratory results of the GC/MS screen for soil sample S-3 are displayed in Appendix C.

## **7.0 ANALYTICAL RESULTS**

### **7.1 Soil Samples**

Laboratory results of soil samples collected at the former Chrysler facility site have been divided into two sections, (1) samples collected in the vicinity of the excavation of the former Chrysler clarifier and (2) samples collected from the installation of eleven ground water monitoring wells and four preliminary assessment borings at the site.

#### **7.1.1 Excavation Soil Samples and Excavation Soil Borings**

Soil samples collected from beneath and in the vicinity of the former Chrysler clarifier were analyzed for purgeable halocarbons and aromatic compounds via EPA test methods 8010 and 8020, respectively, and certain samples were tested for total petroleum hydrocarbons (TPH) by EPA test method 418.1.

Eight soil samples from the former clarifier excavation, collected from various depths beneath and in the vicinity of the former Chrysler clarifier, were submitted for laboratory analysis. TPH was detected at concentrations up to 13,000 mg/kg (sample S-3) at a depth of 22 feet below grade. The analyses additionally detected, PCE, DCE, ethylbenzene and xylene in the parts per million (ppm) range. The analytical results are presented in Table 3 and the soil sampling locations are shown in Figure 4. The one soil sample from the excavation stockpile, SP-S1, exhibited total petroleum hydrocarbon concentration of 180 ppm and a PCE concentration of 20 ppb. Aromatic compounds, ethylbenzene and xylenes were also detected (Table 3).

The results of soil boring analyses revealed the presence of purgeable halocarbon (primarily DCE, PCE and TCE), and aromatic hydrocarbons (benzene, toluene, xylene and ethylbenzene) beneath and extending outward from the location of the former Chrysler clarifier. PCE was detected in concentrations upwards to 200 ppb at 30' below grade, while 1,1-DCE was detected in concentrations up to 180 ppb at 20' below grade. BTEX concentrations ranged from non-detected to 6.7 ppb in samples collected between 10' and 30' below grade. Two samples obtained from soil borings BH-9A and BH-9F exhibited xylene concentrations of 330 ppb and 250 ppb at 20' and 30' below grade, respectively. Table 1 tabulates the analytical results and Figure 3 displays boring locations.

### 7.1.2. Soil Borings and Soil Samples from Ground Water Monitoring Wells

Analytical results include soil samples obtained from four preliminary site assessment borings as well as samples collected during the installation of eleven ground water monitoring wells (Figure 2).

Samples collected from the four preliminary site assessment borings were analyzed for purgeable halocarbons via EPA test method 8010. With the exception of soil boring BH-22, these borings did not contain detectable levels of chemicals. Boring BH-22 at 15 feet, 20 feet and 25 feet below grade, indicated PCE and TCE at levels between 1.4 and 4.0 ppb. Laboratory results are presented in Table 2.

Soil samples collected and analyzed from ground water monitoring wells GW-1 through GW-3 by EPA test method 8010 exhibited low concentrations (1.1 ppb to 61 ppb) of purgeable halocarbons (DCE, PCE, TCE, TCA, Chloroform and Freon 11). The purgeable halocarbons were detected within the capillary fringe or below the water table at depths ranging from 30' to 50' below grade.

Three samples obtained from monitoring well borings GW-10 at 15, 20 and 30 feet below grade, were analyzed for purgeable halocarbons and aromatic hydrocarbons by EPA test methods 8010/8020 and for TPH by EPA method 418.1. These samples were analyzed to verify field observations of contaminants in samples collected from 15 to 35 feet below grade. Laboratory results from the 15 foot level indicated 1,200 ppm of total petroleum hydrocarbons and 1,100 ppb of ethylbenzene. Xylenes were also detected within the 15 foot sample at a concentration of 1,600 ppb. The 20 and 30 foot samples exhibited trace amounts (1.0 ppb to 3.5 ppb) of benzene, toluene, ethylbenzene and xylenes (BTEX) and non-detectable levels of TPH and purgeable halocarbon compounds.

### 7.2 Ground Water Samples

Ground water samples were analyzed for purgeable halocarbon and aromatic hydrocarbons via EPA test methods 601/602 or 8010/8020 respectively. Results of ground water analysis revealed the presence of purgeable halocarbon compounds (primarily PCE, 1,1-DCE, TCE ) as shown in Table 3.

PCE concentrations ranged from 520 ppb in well GW-3 to 2.1 ppb in well GW-6. 1,1-DCE concentrations ranged from 1,400 ppb in GW-4 to 4.2 ppb in GW-6. TCE concentrations ranged from 500 ppb in GW-7 to 4 ppb in GW-6. Trichlorofluoromethane (Freon 11) concentrations ranged from non-detected to 370 ppb in well GW-3. 1,2-DCE, TCA and Chloroform were also detected, but at lower concentrations.

Aromatic hydrocarbons (BTEX) were detected in all wells on-site with the exception of GW-6, GW-8 and GW-9. Benzene concentrations ranged from non-detected to 10 ppb in GW-4.



Generally, the highest chemical concentrations were identified in monitoring well GW-3, and the lowest concentrations were measured in monitoring wells GW-6, GW-8 and GW-9. Figures 9a through 9c display chemical concentrations in ground water for DCE, TCE and PCE, respectively. The data set used to generate figures 9a through 9c are the most current sampling event (January 14-21, 1991) in which all wells were sampled. Fluctuations in the chemical concentrations were evident between sampling events for specific ground water monitoring wells. For example, 1,1-DCE was detected in monitoring well GW-4 at a concentration of 1400 ppb in December, 1990 and at a concentration of 220 ppb in January, 1991. Although ground water chemical concentrations varied from the first sampling round to the third for specific ground water monitoring wells (GW-4, 1,1-DCE), the results were generally consistent for the chemicals analyzed across the entire site.

Analytical results of field and equipment blanks obtained during water well sampling and monitoring well installation revealed trace chemicals in several samples collected. Chloroform, Bromoform, Bromodichloromethane and Dibromochloromethane were detected (low ppb's) in samples obtained from the drilling truck's water tank. These chemicals are common byproducts of the domestic water-chlorination process and do not present a threat to ground water at the concentrations detected. Table 6 displays the results of the QA/QC sampling.

### 7.3 Soil-Gas Samples

Soil-gas samples were analyzed for purgeable halocarbon compounds by EPA test method 8010 and certain samples were also tested for aromatic hydrocarbons by EPA test method 8020. Analytical results of the first survey indicated the presence of Freon 11 in several sample points and DCE and PCE in sample point 1-PT-N. Freon 11 concentrations ranged from non-detected in sample point 5-PT-X to 430 ppb in sample point 2-PT-R. DCE and PCE were detected at concentrations of 2,800 ppb and 120 ppb, respectively. Figure 5 displays sample locations and Table 5 presents laboratory results.

Analytical results of soil-gas samples obtained in the intersection of Burke Street and Beasor Drive revealed non-detectable concentrations of aromatics hydrocarbons (BTEX) and the purgeable halocarbon compounds analyzed, DCE, PCE, TCE and TCA.

## 8.0 DISCUSSION OF FINDINGS

In reviewing PIC's March, 1988, Tank Removal Geologic Report (Appendix E), PIC (Chrysler's consultant) sampled soils and detected chemicals from beneath and in the vicinity of the former Chrysler clarifier. PIC further reported that the impacted soil was fully remediated during an excavation conducted in late March, 1988. However, the discovery of elevated-chemical concentrations in soil samples obtained from the vicinity of PIC's remedial excavation during CEW's preliminary environmental assessment conducted in March, 1989, and the subsequent soil investigations conducted in November, 1990, suggest that Chrysler's characterization and remediation of the impacted soil was incomplete. PIC's soil testing beneath the clarifier was limited to analysis for Total Petroleum Hydrocarbons and did not include testing for purgeable halocarbon or aromatic hydrocarbons.

Analytical results from soil samples taken from several locations within Catellus's excavation beneath the former Chrysler clarifier revealed TPH concentrations up to 13,000 mg/kg and concentrations of 1,200 ppb and 3,800 ppb for DCE and PCE, respectively.

Numerous chemical compounds used by Chrysler for general degreasing as evidenced by MSDS data were very similar to the chemical make up of chemicals detected in soils beneath the removed clarifier. For example, *Emulsion Degreaser* list as its prime ingredients C-10 to C-15 hydrocarbons and aromatics. These same compounds (ie. C-10 to C-15 aliphatic and aromatic hydrocarbons) were detected in soils collected beneath the removed Chrysler clarifier.

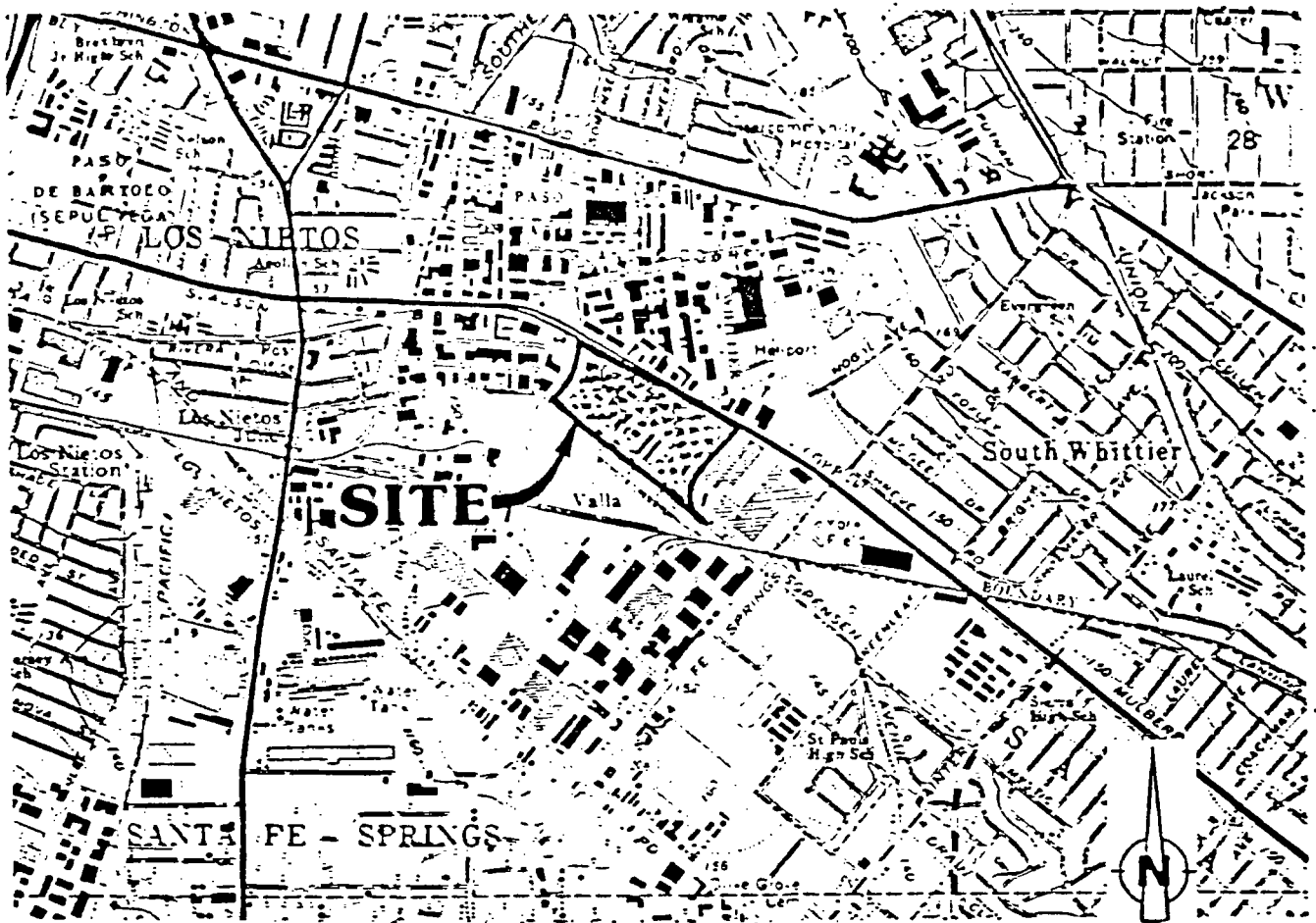
The results of this investigation indicate the presence of chemicals (C-10 to C-15 aliphatic and aromatic hydrocarbons, 1,1-DCE, PCE and TCE) in the soil beneath and extending outward from the location of the removed clarifier. These chemicals were detected at several depths down to the water table (22, 28 and 33 feet below grade; ground water exists at approximately 33 feet below grade at the clarifier location) suggesting that ground water has been impacted by chemicals associated with the former Chrysler clarifier.

The eleven ground water monitoring wells installed to evaluate ground water conditions beneath the former Chrysler facility has revealed that both up-gradient and down-gradient ground water has been impacted by chlorinated and aromatic hydrocarbons. The results also revealed that the chlorinated hydrocarbon concentrations for the January, 1991 sampling were greater in down-gradient monitoring wells GW-3 and GW-7, than in monitoring wells (GW-4 through GW-6, GW-9 and GW-10) located up-gradient of the former Chrysler clarifier (Table 4).

## REFERENCES

1. California Department of Water Resources (CDWR), 1961. Planned Utilization of the Ground Water Basins of the Coastal Plain of Los Angeles County, Appendix A - Ground Water Geology. CDWR Bull. #104, 181p.
2. Bookman-Edmonston Engineering, Inc., 1990. Annual Report on Results of Water Quality Monitoring, Water Year 1988-1989. Prepared in Cooperation with the Central Basin Municipal Water District and West Basin Water Association.
3. Verbal communication with Tom Delsano of the Central Basin Municipal Water District, March, 1991.

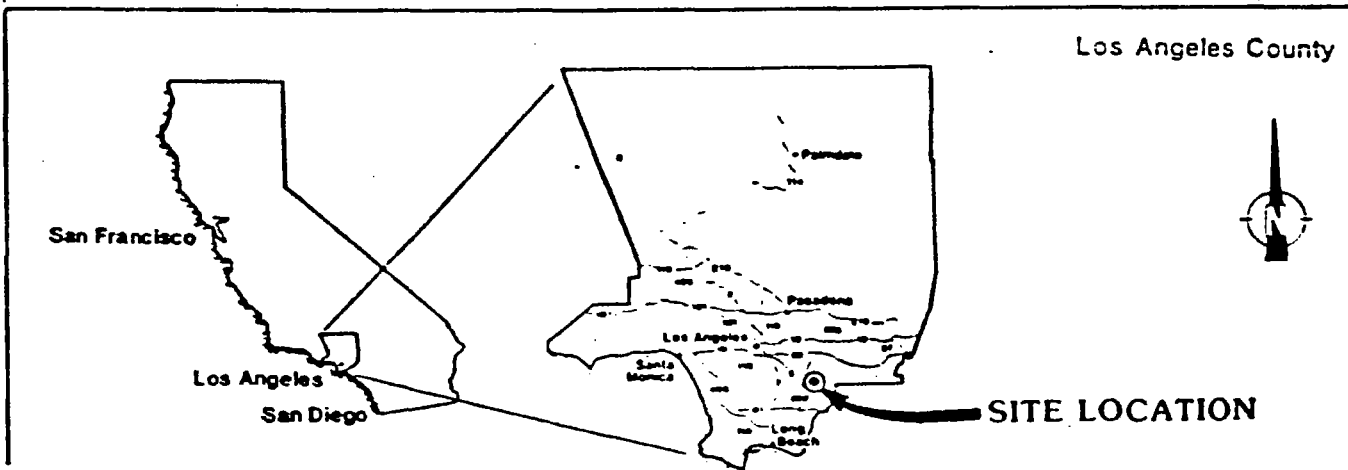
**FIGURES**



**REFERENCE:**

Portion of Whittier 7.5 minute Quadrangle USGS photorevised 1981.

1000 0 2000  
SCALE IN FEET



**SITE LOCATION MAP**

FORMER CHRYSLER NEW CAR PREPARATION FACILITY  
12140 Slauson Avenue, Santa Fe Springs, California  
for: Catellus Development Corporation

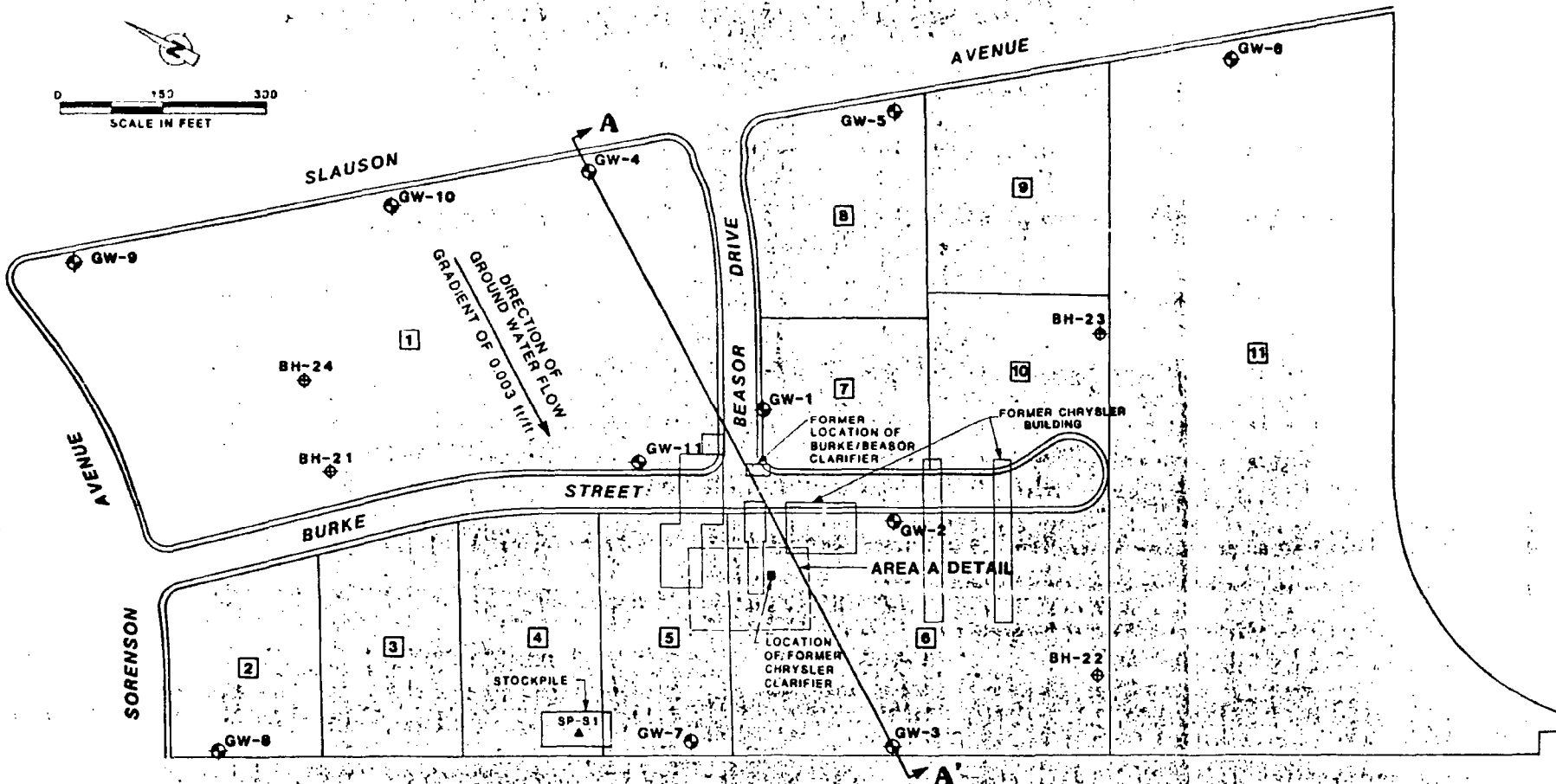
Project No

89-41-130-03

Figure 1a



CONVERSE  
ENVIRONMENTAL **WEST**



#### EXPLANATION

- BH-22 SOIL BORING LOCATION
- GW-3 GROUND WATER MONITORING WELL LOCATION
- 3 LAND PARCEL NUMBER
- A-A' GENERALIZED CROSS SECTION

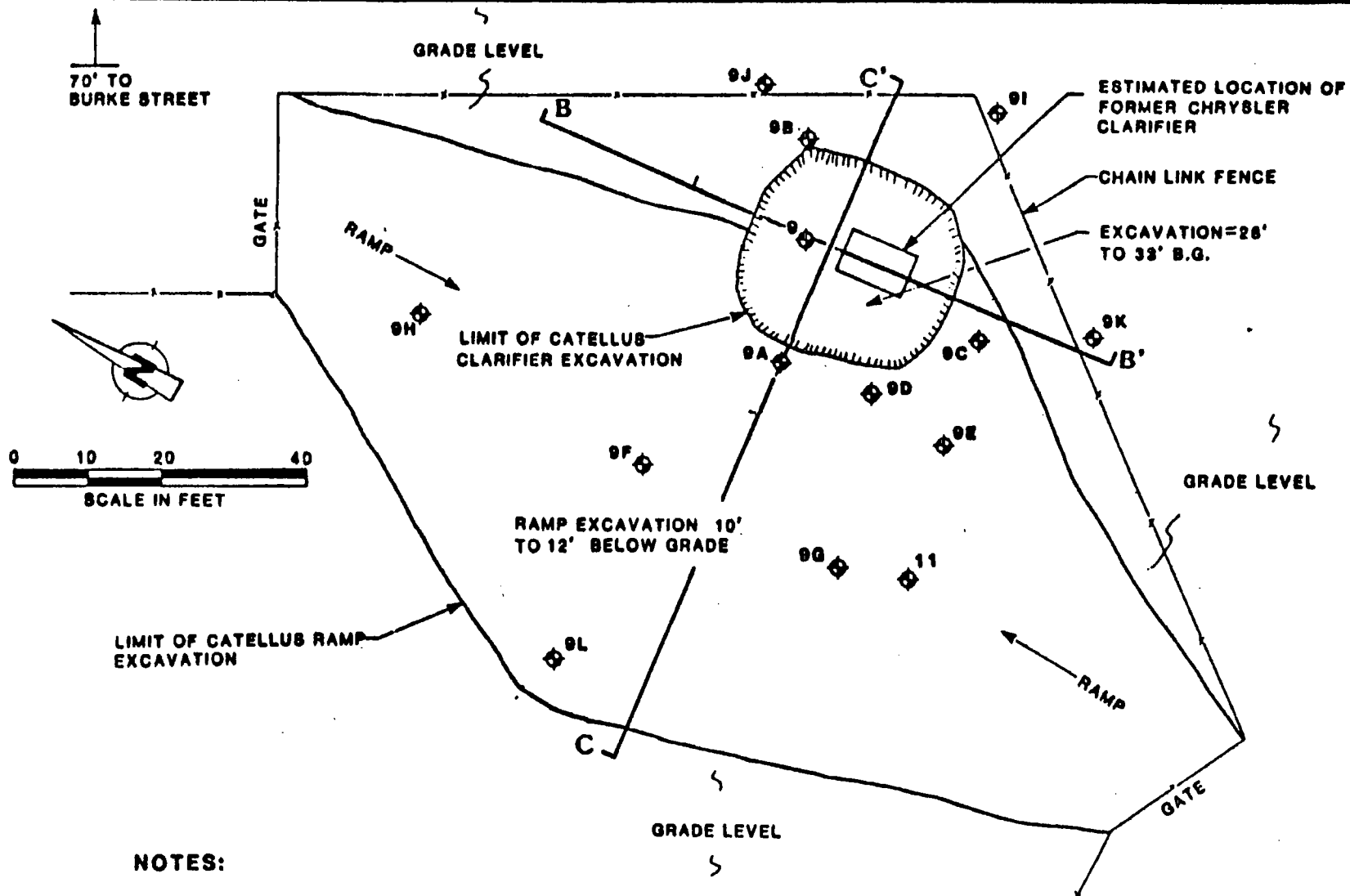
#### SITE PLAN WITH SOIL BORING and WELL LOCATIONS

FORMER CHRYSLER NEW CAR PREPARATION FACILITY  
 12140 Slauson Avenue  
 Santa Fe Springs, California

SCALE 1" = 150'  
 DATE 12/28/90  
 PREPARED BY MKT  
 CHECKED BY JCY  
 APPROVED BY BMS  
 PROJECT NO. 89-41-130-03  
 FIGURE NO. 2



Converse Environmental West



**NOTES:**

- 9L SOIL BORING LOCATION
- B' B' GENERALIZED GEOLOGIC CROSS SECTION

**AREA A DETAIL**

FORMER CHRYSLER NEW CAR PREPARATION FACILITY  
12140 Slauson Avenue  
Santa Fe Spring, California

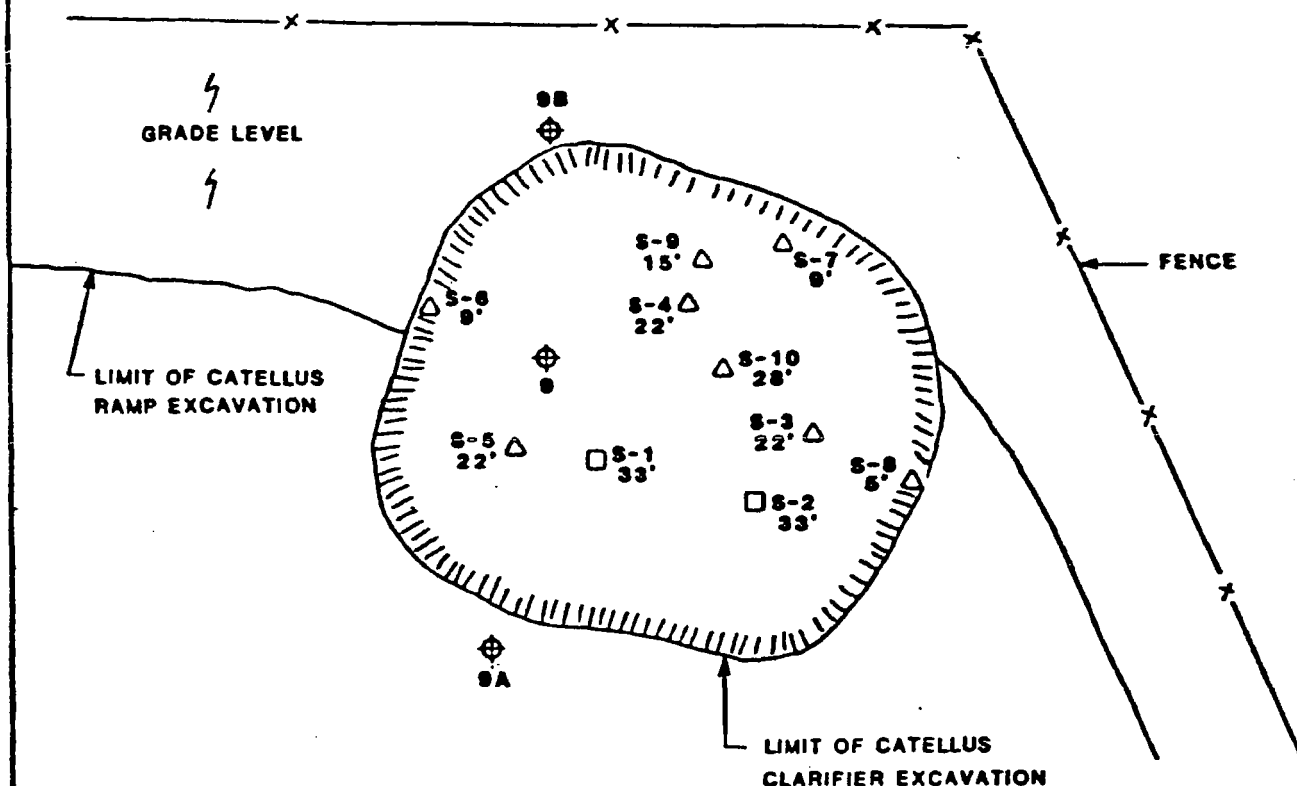
Project No.  
89-41-130-03



**Converse Environmental West**

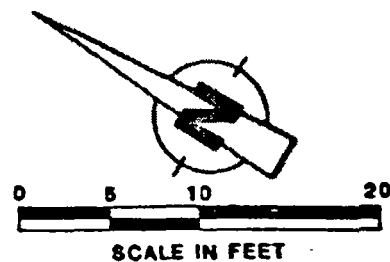
Figure No.

3



#### EXPLANATION

- ⊕ SOIL BORING
- EXCAVATION SOIL SAMPLE LOCATION  
S-1 AND DEPTH 11/18/90
- △ EXCAVATION SOIL SAMPLE LOCATION  
S-4 AND DEPTH 12/16/90



### EXCAVATION SOIL SAMPLE LOCATIONS

FORMER CHRYSLER NEW CAR PREPARATION FACILITY  
12140 Slauson Avenue  
Santa Fe Springs, California

Project No.  
89-41-130-03

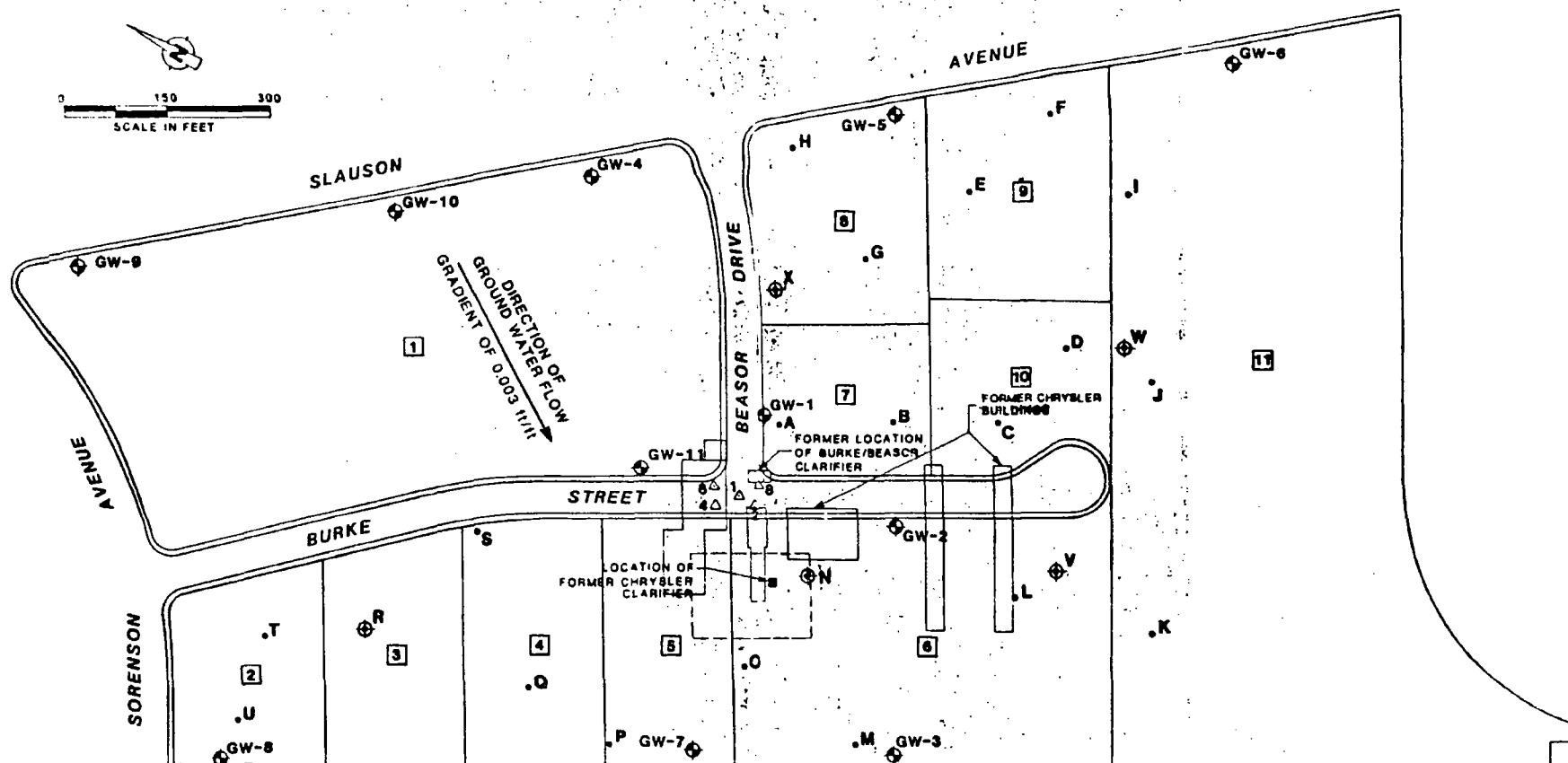


CONVERSE  
ENVIRONMENTAL **WEST**

Figure No.

4





#### EXPLANATION

- GW-3  
 ⊕ Ground Water Monitoring Well Location  
 [3] Land Parcel Number  
 A • Soil-gas Survey Monitoring Point  
 N ⊕ Soil-gas Survey Monitoring and Sampling Point / 12-18-90  
 1 Δ Soil-gas Survey Monitoring and Sampling Point / 1-30-91

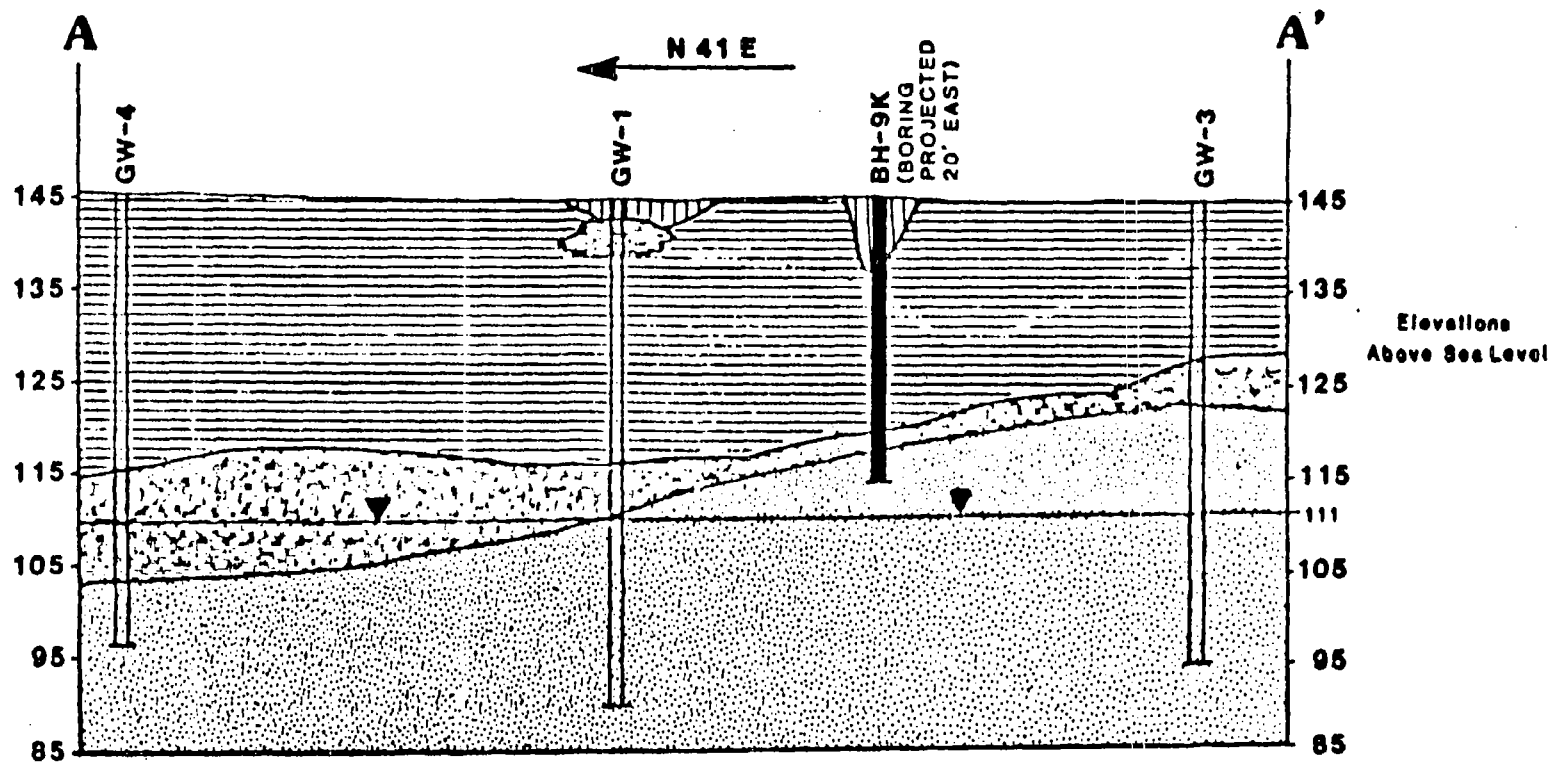
#### SITE PLAN WITH SOIL-GAS SURVEY MONITORING POINT LOCATIONS

FORMER CHRYSLER NEW CAR PREPARATION FACILITY  
 12140 Slauson Avenue  
 Santa Fe Springs, California



Converse Environmental West

Scale	1" = 150'	Project No.	89-41-130-03
Date	12/28/90	Figure No.	5
Prepared By	MKT		
Checked By	JCY		
Approved By	BMS		



#### EXPLANATION



FILL



CLAYS OR SILTS, LITTLE SAND



SANDY SILT OR SILT  
WITH SAND AND GRAVEL



SAND OR GRAVELLY SAND



OBSERVED GROUND WATER ELEVATION



GW-4 GROUND WATER MONITORING WELL



BH-9K SOIL BORING

HORIZONTAL SCALE: 1" = 150'

VERTICAL SCALE: 1" = 20'

### GENERALIZED GEOLOGIC CROSS SECTION A-A'

FORMER CHRYSLER NEW CAR PREPARATION FACILITY  
12140 Slauson Avenue  
Santa Fe Springs, California

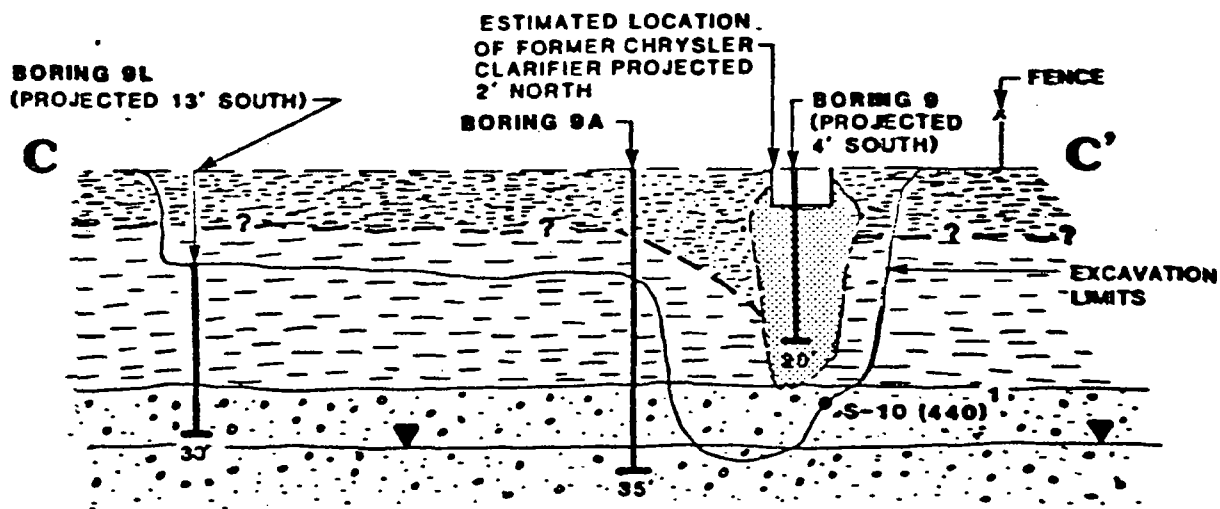
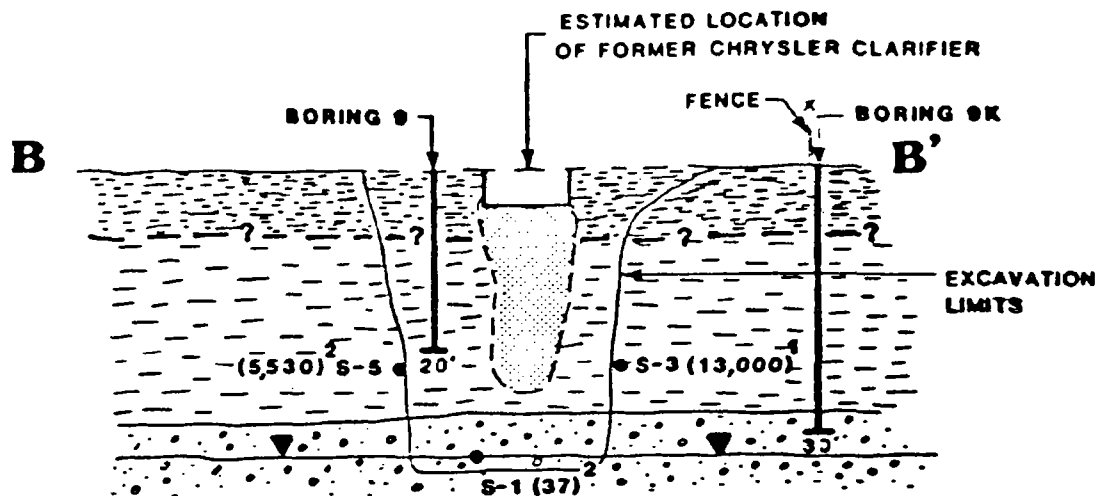
Project No.

89-41-130-03

Figure No.



Converse Environmental West



#### EXPLANATIONS:

- S-10 SOIL SAMPLE LOCATION
- FILL - BASE GRAVEL
- FILL - SAND TO SILTY CLAY
- CLAY TO SILT
- SAND, GRAVELLY SAND
- WATER TABLE

- 1: (TOTAL RECOVERABLE PETROLEUM HYDROCARBON CONCENTRATIONS (ppb))
- 2: (TOTAL PURGEABLE HALOCARBON CONCENTRATIONS (ppb))

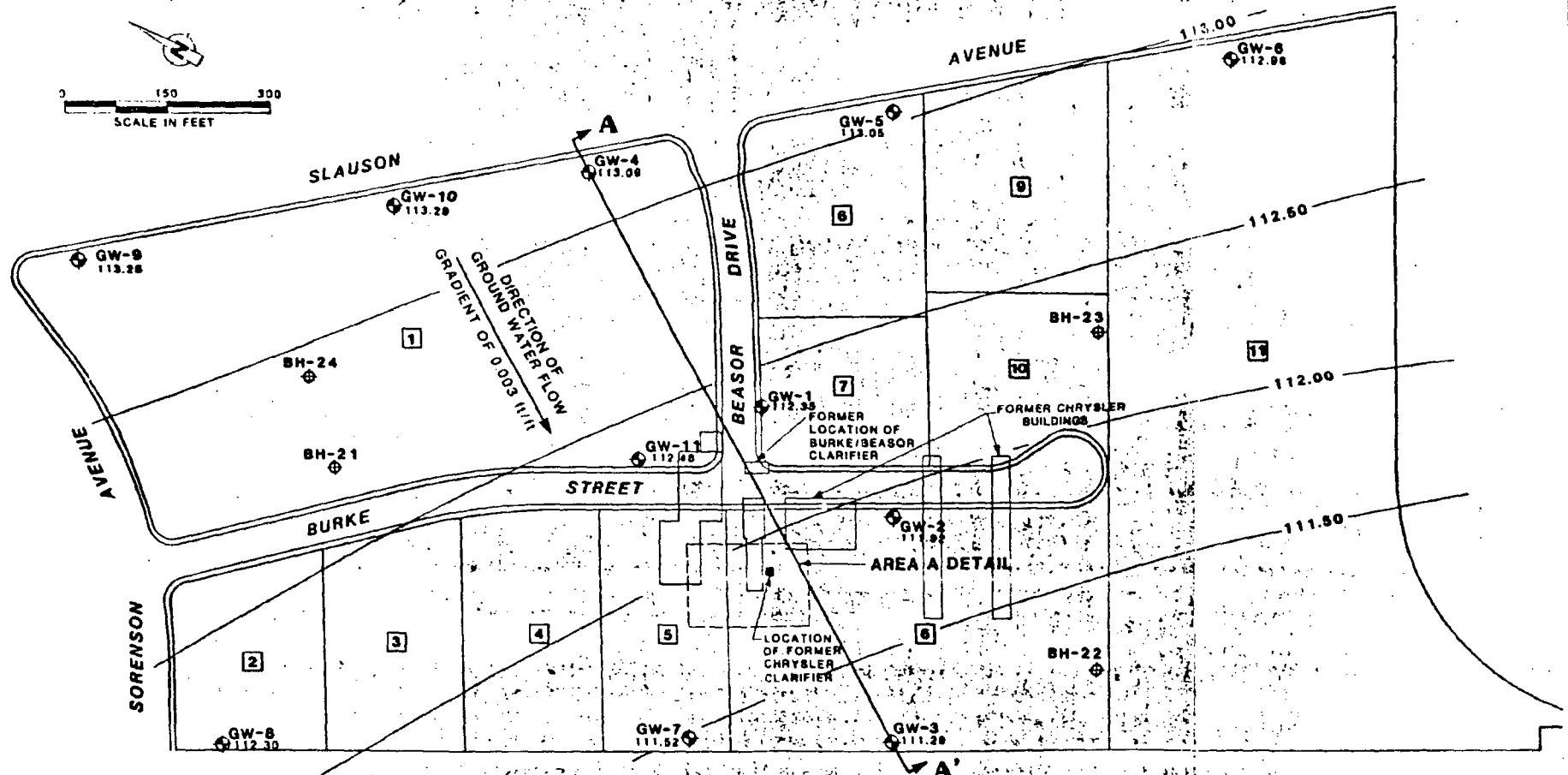
SEE TABLE 6 FOR SUMMARY OF EXCAVATION SAMPLES ANALYTICAL RESULTS



### GENERALIZED GEOLOGIC CROSS SECTIONS B-B' AND C-C'

FORMER CHRYSLER NEW CAR PREPARATION FACILITY  
12140 Slauson Avenue  
Santa Fe Springs, California

Project No  
89-41-130-03



# **EXPLANATION**

- BH-22 SOIL BORING LOCATION
- GW-3 GROUND WATER MONITORING WELL LOCATION
- GW-3 111.92 GROUND WATER ELEVATIONS ABOVE MEAN SEA LEVEL
- 3 LAND PARCEL NUMBER

A-A' GENERALIZED CROSS SECTION

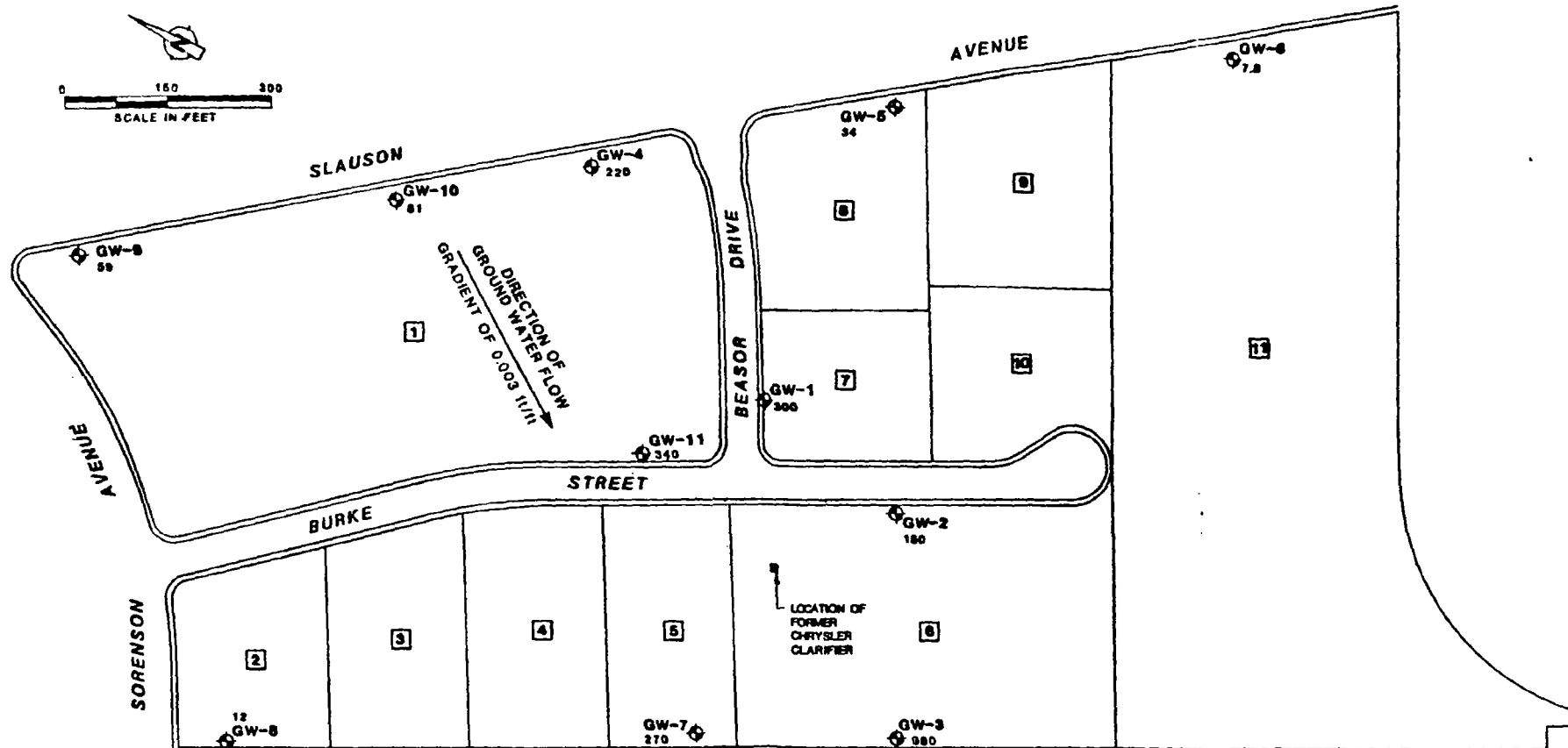
## **GROUND WATER CONTOUR MAP 1/21/91**

**FORMER CHRYSLER NEW CAR PREPARATION FACILITY**  
12140 Slauson Avenue  
Santa Fe Springs, California



**Converse Environmental West**

Scale: 1" = 150'  
Date: 12/28/90  
Prepared by: MKT  
Checked by: JCY  
Reviewed by: BMS  
Project No: 89-41-130-03  
Figure No: 8



#### EXPLANATION

- GW-3** GROUND WATER MONITORING WELL LOCATION
- 980** DCE CONCENTRATIONS (ppb)

#### SITE PLAN with DCE CONCENTRATIONS 1/21/91

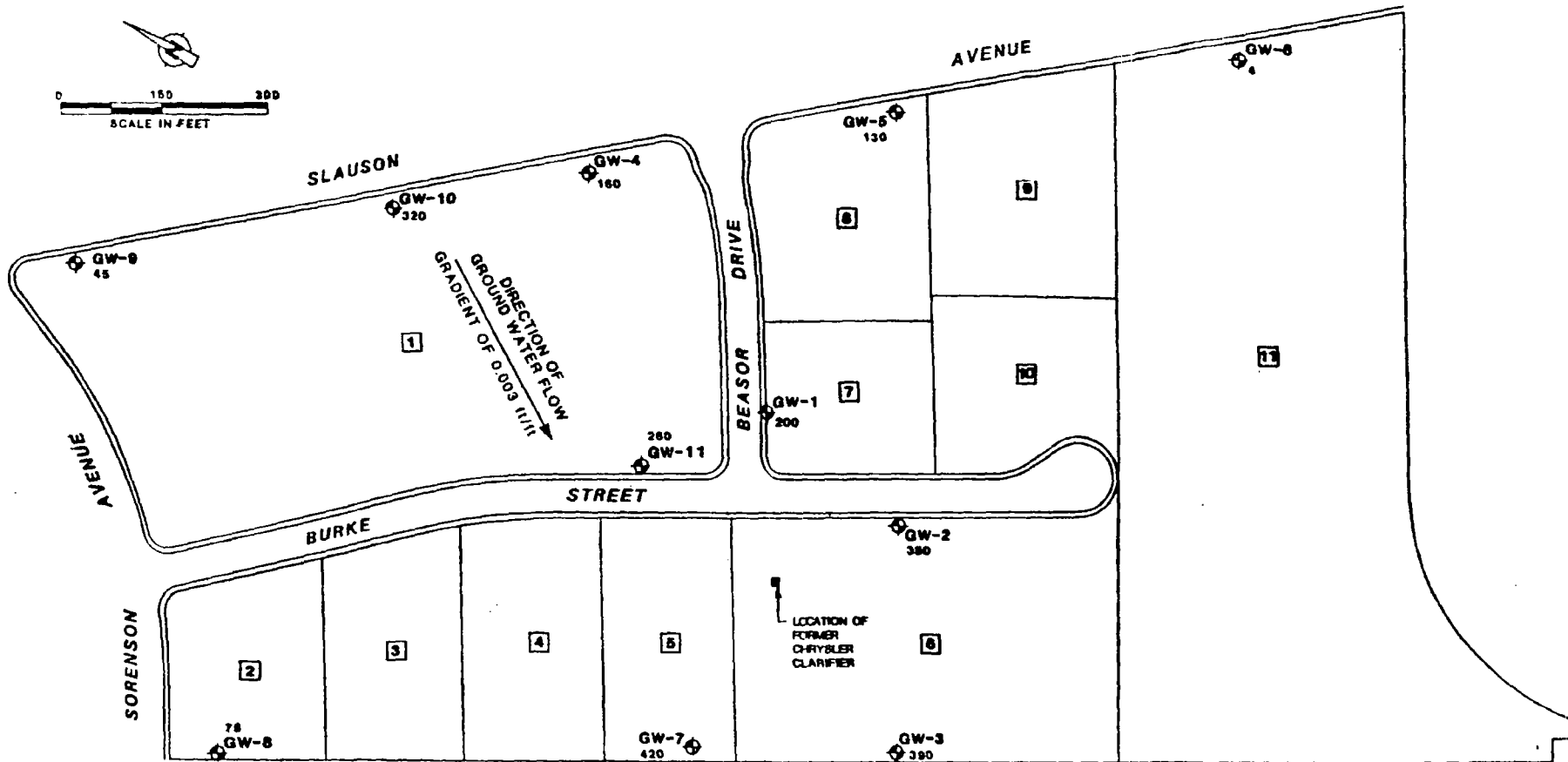
FORMER CHRYSLER NEW CAR PREPARATION FACILITY  
12140 Slauson Avenue  
Santa Fe Springs, California



**Converse Environmental West**

Scale: 1" = 150'	Project No: 89-41-130-03
Date: 9/3/91	Figure No:
Prepared By: MKT	
Checked By: JCY	
Approved By: BMS	

**9a**



#### EXPLANATION

- GW-3 GROUND WATER MONITORING WELL LOCATION  
 390 TCE CONCENTRATIONS (ppb)

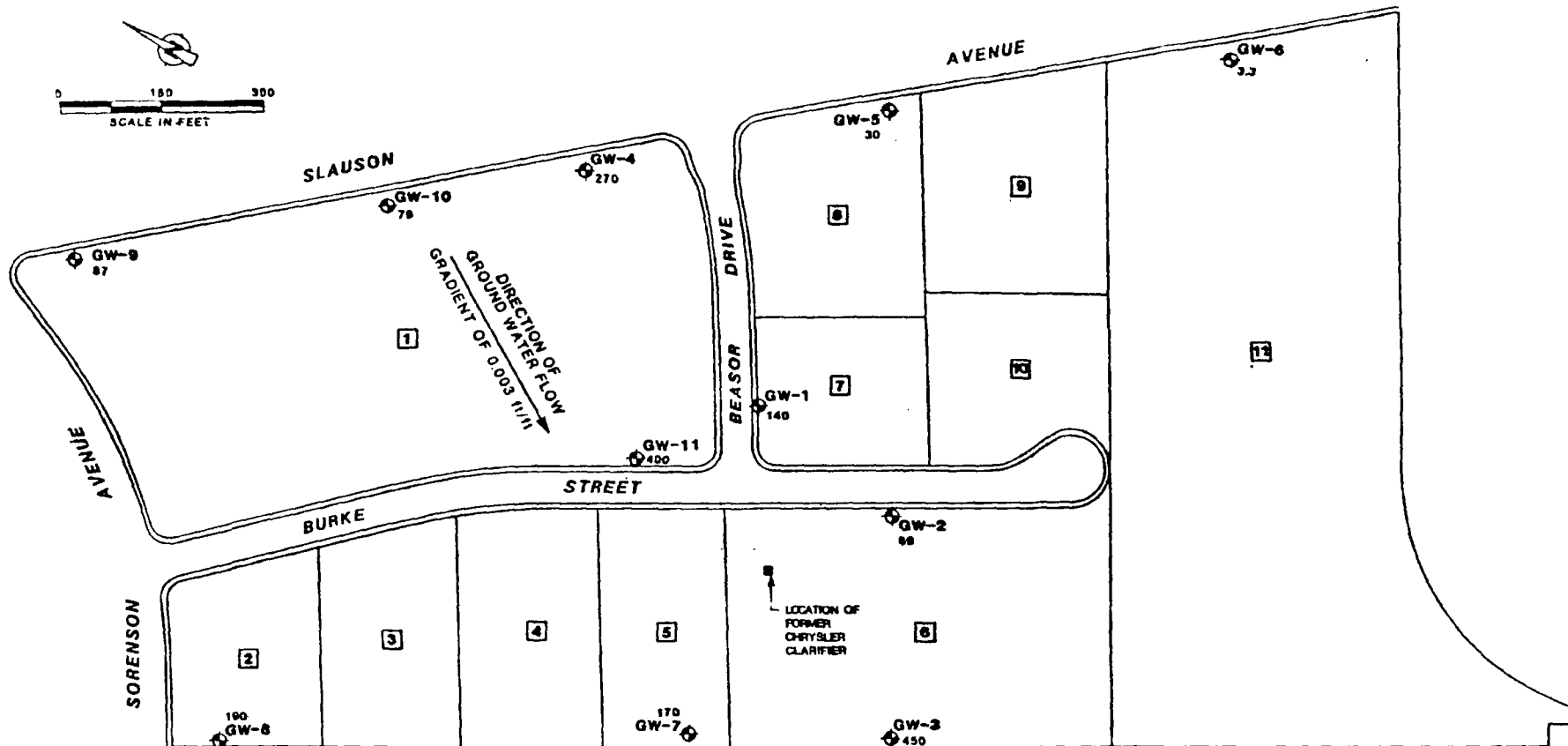
#### SITE PLAN with TCE CONCENTRATIONS 1/21/91

FORMER CHRYSLER NEW CAR PREPARATION FACILITY  
 12140 Slauson Avenue  
 Santa Fe Springs, California

Scale: 1" = 150'  
 Date: 9/3/91  
 Prepared By: MKT  
 Checked By: JCY  
 Approved By: BMS  
 Project No: 89-41-130-03  
 Figure No: 9b



Converse Environmental West



#### EXPLANATION

- GW-3 GROUND WATER MONITORING WELL LOCATION  
 450 PCE CONCENTRATIONS (ppb)

#### SITE PLAN with PCE CONCENTRATIONS 1/21/91

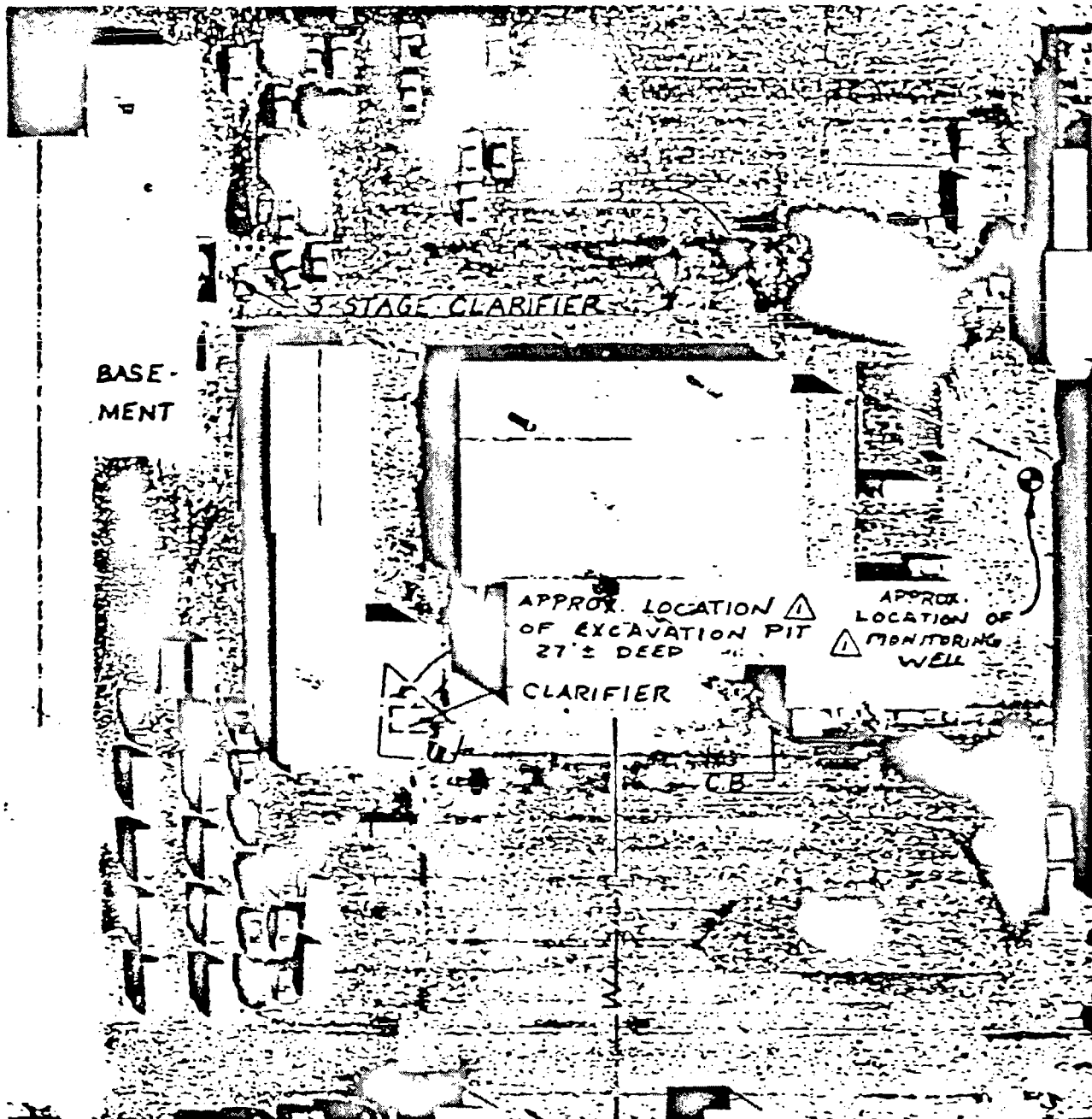
FORMER CHRYSLER NEW CAR PREPARATION FACILITY  
 12140 Slauson Avenue  
 Santa Fe Springs, California

Scale	1" = 150'	Project No.	89-41-130-03
Date	9/3/91	Figure No.	
Prepared By	MKT		
Checked By	JCY		
Approved By	BMS		



Converse Environmental West

9c



**NOTE:**

CLARIFIER SIZE NOT TO SCALE



## AERIAL PHOTOGRAPH OF FORMER CLARIFIER AND EXCAVATION

FORMER CHRYSLER NEW CAR PREPARATION FACILITY  
12140 Slauson Avenue  
Santa Fe Springs, California

Project No  
89-41-133-03



CONVERSE  
ENVIRONMENTAL **WEST**

Figure No

10



**TABLES**

TABLE 1

**ANALYTICAL RESULTS OF SOIL SAMPLES  
CLARIFIER SOIL BORINGS  
FORMER CHRYSLER NEW CAR PREP FACILITY  
SANTA FE SPRINGS, CALIFORNIA**

BORING/ SAMPLE #	DEPTH (ft)	1,1 DCE	PCE	TCE	DCA	TCA	1,2 DCE	CHLOROFORM	B	T	E	X
BH-9	5	ND	570	ND	ND	ND	ND	ND	NA	NA	NA	NA
BH-9	10	ND	55	ND	ND	ND	ND	ND	NA	NA	NA	NA
BH-9A S1	10	15	19	ND	ND	ND	ND	ND	1.6	2.5	ND	0.6
BH-9A S2	20	100	ND	ND	3.6	ND	ND	ND	2.5	5.1	6.7	330
BH-9A S4	30	ND	ND	ND	ND	ND	ND	ND	ND	0.7	ND	ND
BH-9B S4	30	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA
BH-9C S1	10	ND	7.4	ND	ND	ND	ND	ND	0.9	2.1	ND	0.8
BH-9C S2	20	20	ND	ND	ND	ND	ND	ND	2.0	3.6	ND	1.7
BH-9C S3	25	ND	ND	ND	ND	ND	ND	ND	1.0	1.4	ND	0.7
BH-9C S4	30	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA
BH-9D S2	20	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BH-9D S4	30	ND	140	32	0.7	1.5	47	1.2	NA	NA	NA	NA
BH-9F S2	25	14	6.9	3.8	ND	ND	100	ND	0.9	0.9	1.4	14
BH-9F S3	30	ND	200	69	ND	ND	34	ND	3.0	3.0	51	250
BH-9G S1	20	ND	1.3	ND	ND	ND	ND	ND	0.8	2.0	ND	0.9
BH-9G S2	25	6.6	9.3	19	ND	ND	24	ND	0.6	0.7	ND	ND
BH-9G S3	30	ND	ND	ND	ND	ND	ND	ND	ND	1.3	ND	ND
BH-9H S1	20	ND	6.7	2.0	ND	ND	ND	ND	ND	1.3	ND	2.1
BH-9H S2	25	17	ND	ND	ND	ND	ND	ND	ND	1.3	ND	ND
BH-9H S3	30	18	ND	ND	ND	ND	ND	ND	ND	1.2	ND	ND
BH-9I S1	20	ND	12	3.8	ND	ND	ND	ND	0.6	1.3	ND	0.5
BH-9I S2	25	10	11	9.5	ND	ND	ND	ND	0.5	0.7	ND	ND
BH-9I S3	30	ND	ND	ND	ND	ND	ND	ND	0.6	1.1	ND	0.5

TABLE 1

**ANALYTICAL RESULTS OF SOIL SAMPLES  
CLARIFIER SOIL BORINGS  
FORMER CHRYSLER NEW CAR PREP FACILITY  
SANTA FE SPRINGS, CALIFORNIA**

BORING/ SAMPLE #	DEPTH (ft)	1,1 DCE	PCE	TCE	DCA	TCA	1,2 DCE	CHLOROFORM	B	T	E	X
BH-9J S1	20	ND	13	4.5	ND	ND	ND	ND	1.8	2.9	ND	1.0
BH-9J S2	25	ND	ND	ND	ND	ND	ND	ND	0.9	2.7	ND	0.9
BH-9J S3	30	ND	ND	ND	ND	ND	ND	ND	0.5	1.2	ND	0.5
BH-9K S1	20	38	ND	ND	ND	ND	ND	ND	1.2	2.4	ND	0.9
BH-9K S2	25	67	ND	1.6	ND	ND	ND	ND	2.3	6.2	0.6	3.3
BH-9K S3	30	53	ND	ND	ND	ND	ND	ND	0.7	1.5	ND	1.5
BH-9L S1	20	32	8.9	17	ND	ND	11	ND	0.7	1.3	ND	0.5
BH-9L S2	25	70	ND	ND	ND	ND	ND	ND	0.7	1.4	ND	0.8
BH-9L S3	30	25	ND	ND	ND	ND	ND	ND	ND	2.2	ND	1.5

Units: ug/kg

Detection Limits: 0.5 ug/kg

ND: Not Detected

NA: Not Analyzed

1,1 DCE: 1,1 Dichloroethene  
PCE: Tetrachloroethene  
TCE: Trichloroethene  
DCA: 1,1-Dichloroethane  
TCA: 1,1,1-Trichloroethane  
1,2 DCE: CIS-1,2 Dichloroethylene  
B: Benzene  
T: Toluene  
E: Ethylbenzene  
X: Xylenes

TABLE 2

ANALYTICAL RESULTS OF SOIL SAMPLES  
GROUND WATER MONITORING WELLS/  
PRELIMINARY SITE ASSESSMENT BORINGS  
FORMER CHRYSLER NEW CAR PREP FACILITY  
SANTA FE SPRINGS, CALIFORNIA

Boring/ Sample #	Depth	TPH <sup>a</sup>	DCE	PCE	TCE	TCA	CHLOROFORM	FREON 11	B	T	E	X
GW-1 S1	5	NA	NO	NO	NO	NO	NO	NO	NA	NA	NA	NA
GW-1 S2	10	NA	NO	NO	NO	NO	NO	NO	NA	NA	NA	NA
GW-1 S3	15	NA	NO	NO	NO	NO	NO	NO	NA	NA	NA	NA
GW-1 S4	20	NA	NO	NO	NO	NO	NO	NO	NA	NA	NA	NA
GW-1 S5	25	NA	NO	NO	NO	NO	NO	NO	NA	NA	NA	NA
GW-1 S6	30	NA	NO	NO	NO	NO	NO	NO	NA	NA	NA	NA
GW-1 S7	35	NA	NO	NO	NO	NO	NO	NO	NA	NA	NA	NA
GW-1 S8	40	NA	1.4	6.0	13	NO	NO	NO	NA	NA	NA	NA
GW-1 S9	45	NA	11	9.4	18	1.1	1.1	NO	NA	NA	NA	NA
GW-1 S10	50	NA	25	18	29	NO	NO	NO	NA	NA	NA	NA
GW-2 S6	30	NA	18	NO	NO	NO	NO	NO	NA	NA	NA	NA
GW-2 S7	35	NA	67	18	85	NO	NO	12	NA	NA	NA	NA
GW-2 S9	45	NA	41	1.6	16	NO	0.7	0.6	NA	NA	NA	NA
GW-3 S6	30	NA	61	NO	NO	NO	NO	NO	NA	NA	NA	NA
GW-3 S7	35	NA	61	24	56	NO	NO	6.9	NA	NA	NA	NA
GW-3 S9	45	NA	61	6.4	13	NO	NO	1.0	NA	NA	NA	NA
GW-3 S10	60	NA	42	1.3	4.9	NO	NO	NO	NA	NA	NA	NA
GW-10 S3	15	1200	NO	NO	NO	NO	NO	NO	NO	NO	1100	1800
GW-10 S4	20	NO	NO	NO	NO	NO	NO	NO	1.5	3.5	2.5	1.2
GW-10 S6	30	NO	NO	NO	NO	NO	NO	NO	1.0	3.0	0.6	1.0
BIT-21 S4	20	NA	NO	NO	NO	NO	NO	NO	NA	NA	NA	NA
BIT-21 S6	30	NA	NO	NO	NO	NO	NO	NO	NA	NA	NA	NA
BIT-22 S1	5	NA	NO	NO	NO	NO	NO	NO	NA	NA	NA	NA
BIT-22 S2	10	NA	NO	NO	NO	NO	NO	NO	NA	NA	NA	NA
BIT-22 S3	15	NA	NO	3.4	NO	NO	NO	NO	NA	NA	NA	NA
BIT-22 S4	20	NA	NO	1.4	2.3	NO	NO	NO	NA	NA	NA	NA
BIT-22 S5	25	NA	NO	4.0	3.2	NO	NO	NO	NA	NA	NA	NA
BIT-22 S6	30	NA	NO	NO	NO	NO	NO	NO	NA	NA	NA	NA

TABLE 2

ANALYTICAL RESULTS OF SOIL SAMPLES  
GROUND WATER MONITORING WELLS/  
PRELIMINARY SITE ASSESSMENT BORINGS  
FORMER CHRYSLER NEW CAR PREP FACILITY  
SANTA FE SPRINGS, CALIFORNIA

	Depth	TPH*	DCE	PCE	TCE	TCA	CHLOROFORM	FREON 11	B	T	E	X
BH-23 S4	20	NA	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA
BH-23 S6	30	NA	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA
BH-24 S5	25	NA	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA
BH-24 S6	30	NA	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA

Units: ug/kg (ppb)

Detection Limits: 0.8 ug/kg

ND: Not Detected

NA: Not Analyzed

DCE: 1,1-Dichloroethene

PCE: Tetrachloroethene

TCE: Trichloroethene

TCA: 1,1,1-Trichloroethane

FREON 11: Trichlorofluoromethane

B: Benzene

T: Toluene

E: Ethylbenzene

X: Xylenes

TPH\*: Total Petroleum Hydrocarbons

Units: mg/kg (ppm)

TABLE 3

ANALYTICAL RESULTS OF STOCKPILE AND EXCAVATION SOIL SAMPLES  
FORMER CHRYSLER NEW CAR PREP FACILITY  
SANTA FE SPRINGS, CALIFORNIA

SAMPLE #	DEPTH (ft)	TPH*	1,1 DCE	PCE	TCE	DCA	TCA	1,2 DCE	CHLOROFORM	B	T	E	X
S-1 <sup>1</sup>	33	NA	6.9	14	14	ND	ND	1.7	ND	ND	NA	NA	NA
S-2 <sup>1</sup>	33	NA	ND	3.2	7.9	ND	ND	1.7	ND	NA	NA	NA	NA
S-3	22	13,000	ND	410	90	ND	ND	220	ND	ND	ND	200	1,000
S-4	22	6,200	ND	2,100	160	ND	ND	400	ND	ND	ND	810	18,000
S-5	22	360	ND	3,800	340	19	83	1,200	88	ND	380	2,700	11,000
S-6	9	ND	ND	4.8	0.8	ND	ND	ND	ND	ND	ND	ND	1.6
S-9	15	ND	ND	14	1.5	ND	ND	ND	ND	ND	ND	ND	ND
S-10	28	440	ND	100	4.4	ND	ND	ND	ND	ND	4.2	4.0	55
SP-S1	6"	180	ND	20	ND	ND	ND	ND	ND	ND	ND	7.7	95

Units: ug/kg (ppb)

Detection Limits: 0.5 ug/kg  
S-3 DL x 50  
S-4 DL x 50  
S-5 DL x 50

ND: Not Detected

NA: Not Analyzed

1,1 DCE:

Dichloroethene

PCE:

Tetrachloroethene

TCE:

Trichloroethene

DCA:

1,1-Dichloroethane

TCA:

1,1,1-Trichloroethane

1,2-DCE:

CIS-1,2 Dichloroethylene

B:

Benzene

T:

Toluene

E:

Ethylbenzene

X:

Xylenes

TPH\*: Total Petroleum Hydrocarbons

UNITS: mg/kg (ppm)

<sup>1</sup> Sample collected on November 19, 1990

All other samples collected on December 18, 1990.

**TABLE 4**  
**ANALYTICAL RESULTS OF GROUND WATER SAMPLES**  
**FORMER CHRYSLER NEW CAR PART FACILITY**  
**SANTA FE SPRINGS, CALIFORNIA**

WELL/ SAMPLE #	1,1-DCE	1,2-DCE	PCE	TCE	TCA	CHLOROFORM	FREON 11	B	T	E	X
GW-1, S1 <sup>1</sup>	490	ND	290	370	ND	ND	100	NA	NA	NA	NA
GW-1, S1 <sup>2</sup>	630	ND	250	430	ND	ND	190	ND	ND	ND	NA
GW-1, S1 <sup>4</sup>	300	ND	140	200	3.3	3.8	120	ND	ND	ND	ND
GW-2, S1 <sup>1</sup>	200	ND	110	470	ND	ND	88	NA	NA	NA	NA
GW-2, S1 <sup>2</sup>	100	ND	78	400	ND	ND	67	ND	ND	ND	NA
GW-2, S1 <sup>4</sup>	150	ND	69	300	ND	ND	71	ND	ND	ND	ND
GW-3, S1 <sup>1</sup>	850	ND	520	450	14	ND	290	NA	NA	NA	NA
GW-3, S1 <sup>2</sup>	1200	ND	390	300	ND	ND	310	ND	ND	ND	NA
GW-3, S1 <sup>4</sup>	980	ND	450	390	12	10	370	2.0	ND	ND	ND
GW-4, S1 <sup>3</sup>	1400	ND	400	340	13	ND	270	10	ND	ND	NA
GW-4, S1 <sup>4</sup>	220	ND	270	160	ND	ND	97	4.4	2.0	6.0	16
GW-5, S1 <sup>3</sup>	110	ND	29	150	ND	ND	27	ND	ND	ND	NA
GW-5, S1 <sup>4</sup>	34	ND	30	130	ND	ND	ND	0.8	0.8	2.2	5.1
GW-6, S1 <sup>3</sup>	4.2	ND	2.1	63.2	ND	1.4	ND	ND	ND	ND	NA
GW-6, S1 <sup>4</sup>	7.0	ND	3.3	4.0	ND	ND	ND	ND	ND	ND	ND
GW-7, S1 <sup>3</sup>	130	ND	160	500	ND	ND	28	ND	ND	ND	NA
GW-7, S1 <sup>4</sup>	270	3.3	170	420	3.8	2.0	55	0.9	ND	ND	ND
GW-8, S1 <sup>4</sup>	12	1.7	190	75	ND	ND	ND	ND	ND	ND	ND
GW-9, S1 <sup>4</sup>	59	ND	87	45	5.0	ND	ND	ND	ND	ND	ND
GW-10, S1 <sup>4</sup>	81	ND	79	320	ND	ND	ND	0.7	ND	ND	ND
GW-11, S1 <sup>4</sup>	340	ND	400	260	8.3	ND	190	4.6	1.2	ND	1.7

Units: ug/l (ppb)

Detection Limits: 0.5 ug/l

ND: Not Detected

NA: Not Analyzed

1,1-DCE: 1,1 - Dichloroethene

1,2-DCE: 1,2 - Dichloroethene

PCE: Tetrachloroethene

TCE: Trichloroethene

TCA: 1,1,1 - Trichloroethane

FREON 11: Trichlorofluoromethane

B: Benzene

T: Toluene

E: Ethylbenzene

X: Xylenes

<sup>1</sup>: Samples collected on November 28, 1990

<sup>2</sup>: Samples collected on December 3, 1990

<sup>3</sup>: Samples collected on December 11-12, 1990

<sup>4</sup>: Samples collected on January 14-21, 1991

TABLE 5

**ANALYTICAL RESULTS OF SOIL-GAS SAMPLES  
FORMER CHRYSLER NEW CAR PREPARATION FACILITY  
SANTA FE SPRINGS, CALIFORNIA**

SAMPLE #	DCE	PCE	TCE	TCA	FREON 11	B	T	E	X	DETECTION LIMIT
1-PT-N	2000	120	ND	ND	360	NA	NA	NA	NA	10
2-PT-R	ND	ND	ND	ND	430	NA	NA	NA	NA	10
3-PT-V	ND	ND	ND	ND	110	NA	NA	NA	NA	10
4-PT-W	ND	ND	ND	ND	400	NA	NA	NA	NA	10
5-PT-X	ND	ND	ND	ND	ND	NA	NA	NA	NA	10
VG-1	ND	ND	ND	ND	NA	ND	ND	ND	ND	100
VG-2	ND	ND	ND	ND	NA	ND	ND	ND	ND	100
VG-4	ND	ND	ND	ND	NA	ND	ND	ND	ND	100
VG-6	ND	ND	ND	ND	NA	ND	ND	ND	ND	100
VG-8	ND	ND	ND	ND	NA	ND	ND	ND	ND	100

UNITS: NL/L (ppb)

ND: Not Detected

NA: Not Analyzed

DCE: Dichloroethene

PCE: Tetrachloroethene

TCE: Trichloroethene

TCA: 1,1,1-Trichloroethane

FREON 11: Trichlorofluoromethane

B: Benzene

T: Toluene

E: Ethylbenzene

X: Xylenes

PT: Samples collected on 12/18/90

VG: Samples collected on 1/30/91



TABLE 6

ANALYTICAL RESULTS OF QA/QC SAMPLES  
 FORMER CHRYSLER NEW CAR PREP FACILITY  
 SANTA FE SPRINGS, CALIFORNIA

SAMPLE #	DCE	PCE	TCE	TCA	CHLOROFORM M	FREON 11	Bromoform	Bromo- Dichloromethane	Dibromo- chloromethane	B	T	E	X
Field Blank GW-2 12/03/90	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA
Equipment Blank Rig Tank 12/05/90	ND	ND	ND	ND	2.9	ND	ND	4.6	3.5	ND	ND	ND	NA
Field Blank #2 12/11/90	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA
Trip Blank GW-3 12/12/90	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA
Equipment Blank Rig Tank #1 01/08/91	ND	ND	ND	ND	2.3	ND	10.0	7.9	17	ND	1.7	0.5	NA
Equipment Blank Rig Tank #2 01/08/91	ND	ND	1.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA
Field Blank 01/15/91	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trip Blank 01/15/91	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Equipment Blank #1 01/15/91	1.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Equipment Blank #1A 01/15/91	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Equipment Blank Rig Tank #4 01/15/91	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

TABLE 6

ANALYTICAL RESULTS OF QAVOC SAMPLES  
FORMER CHRYSLER NEW CAR PREP FACILITY  
SANTA FE SPRINGS, CALIFORNIA

SAMPLE #

	DCE	PCE	TCE	TCA	CHLOROFORM M	FREON 11	Bromoform	Bromo- Dichloromethane	Dibromo- chloromethane	B	T	E	X
Field Blank 01/17/91	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trip Blank 01/17/91	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Equipment Blank 01/17/91	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Field Blank 01/21/91	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Units: ug/l (ppb)

Detection Limits: 0.5 ug/l

ND: Not Detected

NA: Not Analyzed

DCE: 1,1 - Dichloroethene

PCE: Tetrachloroethene

TCE: Trichloroethene

TCA: 1,1,1 - Trichloroethane

Freon 11: Trichlorofluoromethane

B: Benzene

T: Toluene

E: Ethylbenzene

X: Xylenes